

CREATING ELECTRONIC COMMUNITIES:
MASS AND VERNACULAR TECHNOLOGIES FOR
INTERPERSONAL COMMUNICATION VIA COMPUTER

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Communication forms the foundation for the growth of community, and in an information society, computers prove fundamental for facilitating such communication. Instead of extending the historical trend of facilitating large social organizations and centralized bureaucracies, computer networking today uses a "mass media" approach to appeal to a broad audience through presentation of a wide variety of database services. Other groups augment this trend by utilizing computers in a vernacular manner. Like vernacular languages, these arenas for communication grow from the people who use them. Electronic communities emerge within both mass and vernacular computer networks.

Six systems were examined through observation, interviews, qualitative content analysis of database materials and other techniques in order to determine how computers influence patterns of communication and aid the development of community. The systems, ranging

from mass to vernacular, include CompuServe Information Service, the Source, CommuniTree Group, ComputerTown USA, the Office for Open Network, and Community Memory.

Mass systems provide a forum well-adapted for interpersonal communication through computers, and offer both private and public arenas for interaction through electronic mail, bulletin boards, and special-interest groups.

"Fictional" communities, where participants play the role of fictional characters and engage in a sort of ongoing improvisational theatre, are also popular. Vernacular systems tend to locate terminals in public places rather than in private homes, so that the online communication does not grow to be so intricate. Instead, participants form communities in the areas that surround terminals as well as online.

Over time, mass systems take on aspects of the vernacular (such as allowing more user control) while the vernacular systems become "massified" by growing larger, more differentiated, and allowing operators to exert more control over the content of messages. The two appear to be merging into a single form of citizen/consumer-oriented computer communications system that provides a range of services with some degree of user control. These pockets of community appear to provide a gemeinschaftliche alternative to the predominantly Gesellschaft nature of today's world.

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BIOGRAPHICAL SKETCH

Mary Theresa Toles was born in Cobleskill, New York, in 1956. She earned the Bachelor of Arts in 1978 from Beaver College and the Master of Arts in 1981 from Cornell University. In both cases, the major field of study was sociology.

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To my parents

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CHAPTER ONE

COMPUTER NETWORKING AND THE SEARCH FOR COMMUNITY

The search for community rather resembles the quest for the grail. We have developed an ideal of what the perfect community should involve, sense that we have lost the capability to achieve that state in the muddle of today's world, and harbor strong suspicions that we can reclaim its miraculous properties if only we approach the matter in the proper fashion.

Unlike the legendary grail, however, the ideal community cannot be attained merely through sheer exhibition of virtue. The demons that thwart this quest represent the structure of contemporary society as it has evolved over the past few centuries. The complexity of such a large-scale society creates the need for a division of labor among specialized subdivisions in order to approach the diverse range of tasks that must be performed. This functional differentiation must be countered with some means of reuniting the segmented sectors, such as through social exchanges that create interdependence among the various parts of society in a way that extends beyond any immediate goal.

Communication, both among individuals and groups, functions as an important factor in creating such inter-

dependence. In addition to providing the foundations for social action, communication also shapes the ways in which people define the world by forming an encompassing environment that gives direction to the ideas that are formed and the social attitudes that emerge.

Today, the importance of communication is heightened by the shift to an information economy as well as the increased complexity of American culture. Today, individuals seek community through new avenues that rely on communications more than ever: the distinction between a "community" group and an "interest" group grows less clear as interpersonal channels of communication merge with technologically-assisted ones (such as the telephone, television, and print media) in ways that can extend small local organizations into nationally-known entities.

In a culture that depends on technology to a large extent, it seems entirely reasonable that individuals turn to technological means to extend the channels of communication among individuals. By doing so, we provide new arenas to extend that communication into a form that allows the growth of technologically-mediated communities. The idea of maintaining a previously-formed sense of community through such means is not new: American Telephone and Telegraph's advertising campaigns urge consumers to augment their personal relationships by using the telephone to "reach out and touch someone" (Arlen, 1980). In a technologically-based culture, utilizing electronic

devices to mediate communication provides a more-than-adequate substitute for actually communicating in person.

What is new, however, revolves around the use of mediated forms of communication to create communities in the first place, instead of merely enhancing channels that already exist. In a Canadian community, for example, in-person communication among community members is becoming less frequent than telephone contact, although no relationship in the community has been sustained solely through the use of telephones (Wellman, 1979).

The potential for the technological creation of community, as well as mediation of existing communities, grows continually larger. The computer plays no small role in this process of communitas ex machina. The increased processing power of microcomputer technology combined with rapidly falling costs of microchips reinforces the stepped-up promotion by computer manufacturers that aims to bring microcomputers into the daily life of most individuals. The United States alone accounts for just over 80% of the 1.5 million "personal" computers used on the planet, and about six percent of American homes now own some computer-based device. Many of these microcomputer owners use their machines to communicate with one another by connecting their personal computers with other computers in order to share resources such as programs or database information through a computer network. Members of computer clubs state that they

routinely access such networks, and eleven percent of home users indicated that they use their computers interactively as part of a communications network in a 1981 survey. An additional 29% maintained that they planned to do so in the future (Dordick, Bradley, and Nanus, 1981; LINK, 1982; Nilles, 1982).

Determining the precise share of the personal computer market that these networks hold is difficult, since many of the groups are short-lived. Local computer groups may attempt to build a "bulletin board" type of network, where members simply leave messages in the computer, only to find that the project requires so much time and energy that its continuation is not warranted. One trend is clear, however: the use of telecommunications networks to link computers together is increasing. Eleven of fifteen community groups contacted in a recent study had begun to use computers since 1980, and six of that group had introduced them less than a year previously (Haight, Rubinyi, and Zornosa, n.d.).

This thesis examines the creation of communities through the use of computer networking, focusing on the ways that computer technology shapes communication among individuals and provides new arenas for that communication to lead to the growth of community. The questions posed here are not intended to contribute to the literature on the "social impacts" of the microcomputer; while certain patterns may be suggested by this research, predictions

of the future may be found elsewhere.

The central question addressed here concerns the requisites for communication in a democracy. Three lines of inquiry are intertwined in an effort to clearly articulate the nature of electronic communities. A microsocial perspective guides an inquiry into the ways that individual participants present themselves in the world of intimate strangers created by computer networks. A more macrosocial approach raises questions about the sociological concept of "community" by examining the structure and processes of the electronic communities themselves and charting their evolution over time. Finally, an inquiry into the public policy issues raised by computer communication considers the more immediate implications of telecommunications technology in a democracy.

In order to find some answers to those questions, I selected six computer networking groups on the basis of their availability for study, stability over time, and types of services they offer to the public. The six groups (the CommuniTree Group, Community Memory Project, CompuServe Information Service, ComputerTown USA, the Office for Open Network, and the Source) were studied through a variety of methods so that I could gain an understanding of the different services each provides and the ways in which these contribute to the creation of electronic communities. Participant observation and

simple observation, interviews, a questionnaire, analysis of questionnaire data provided by the system operators, qualitative content analysis of database messages and publicity material, ongoing correspondence with system operators, and unobtrusive measures concerning the setting of the organization all contributed to the study (see Appendix A for a detailed discussion of the methodologies employed).

This exploration indicated that while each system provides a model of a specific type of computer communications application, the group as a whole illustrates two general approaches to computerized communication: mass and vernacular. The operators of systems where a mass approach is employed tend to treat interuser communication from the standpoint of its appeal as a service to be sold to a broad audience. This "mass media" approach structures communication in certain ways; the channels open for communication among subscribers are limited to what the system operator provides for a fee. The Source and CompuServe Information Service (CIS) exemplify this approach.

The vernacular approach resembles the growth of a vernacular language (speech patterns that emerge from a particular social grouping spontaneously) rather than the more standardized structure that characterizes the mass approach. Here, the users of the technology themselves act as the system operators; as well as consuming

information, the users of these systems produce it. Each of the four vernacular systems apparently offers a different type of service. CommuniTree provides computerized conferencing, ComputerTown USA is a computer literacy project, the Office for Open Network operates an interpersonal networking service that happens to use a computer, and the Community Memory Project seeks to promote democratic forms of communication by providing public access to computerized information. Still, each points to the potential for using computers in a decentralized and cooperative fashion and represents an application of computer technology that grew from the needs and goals of the users themselves.

The concepts of mass and vernacular technology are merely ideal types, of course, and the six systems may be thought of as occupying spaces on a continuum between the two. A clearly-defined line of demarcation does not exist. It is important to remember, however, that the continuum describes different types of computerized communication; while the mass and vernacular approaches modify the influences of the physical aspects of the technology, the use of the computer creates certain boundaries for communication.

Within that framework, however, the difference between the mass and vernacular approaches allows for the creation of several types of communities. The mass systems, typically accessed from computers located in

private homes, provide a forum suited to linking isolated individuals with one another. The creation of communities of individuals who interact solely through the computer becomes possible. In contrast, the information on the vernacular systems is often accessed from a terminal located in some public area, which increases the likelihood of online interaction being supplemented by a sense of community among users who frequent the site where the computer is located.

The creation of both forms of electronic community provides insight into the nature of today's complex, technological society. The mere fact that users of computers attempt to communicate with one another and form such communities serves as an indicator of the psychological importance of being part of a cohesive group. The creation of technologically-mediated forms of community underlines the geographic mobility that cuts individual ties to a physical location and raises interesting questions about the alienation that allegedly characterizes the modern world. The potential of the computer to provide a technologically-based supplement to the physical communities that technology has all too often helped disintegrate should not be ignored.

CHAPTER TWO
OF ACORNS AND OAKS:
COMMUNICATION AND THE GROWTH OF COMMUNITY

Definitions of community are strongly colored by the historical experience of our culture. While "community" is generally recognized as a social unit consisting of a collection of individuals who regularly interact with one another, are aware of their status as members of a community, play distinctive roles within the group, and collectively regulate their behavior through norms or other forms of social control, it is also defined as being especially reliant on geographical boundaries. Community is a place.

Still, the idea of community also indicates a way of life. Community members must act collectively to approach the common concerns of everyday life. This behavioral approach widens the definition of community by including those communities not covered by the constraints of physical space, communities-of-interest. These groups, networks of individuals who share some common trait or concern (members of a professional association, adherents to a particular religious order, or supporters of some cause, for example) have grown increasingly common in recent years. Such groups provide

a framework for discussing community that is more appropriate for a highly mobile, complex society than is the simple place-based definition (Alinsky, 1971; Hiller, 1941; Kaufman, 1959).

Whether geographic or not, however, the notion of community evokes certain responses from most people: a community is assumed to consist of a tightly-knit group marked by close relationships among individuals. This atmosphere allegedly leads, as if by magic, to intense feelings of self-worth, and perhaps even to the eventual solution to many of the world's problems.

Naturally, such astonishing results need not in actuality follow the establishment of a community. Even with the emotional baggage that accompanies the concept, however, the notion of community provides an image that serves as a counterpart for the image of the large, alienating society. The two may be considered as endpoints on a continuum describing social relations; as ideal types depicting the nature and range of social organization. The dichotomy between Gemeinschaft (community) and Gesellschaft (association, or society) drawn by Ferdinand Toennies exemplifies this distinction that underlies much of the discussion of community.

Gemeinschaft societies are characterized by family, rural, or village life, where people participate in the activities of the group with all aspects of their sentiments, minds, hearts, and consciences. The main emphasis

in social relationships centers around the relationship itself, and questions of meaning, motive, intent, and emotion dominate. Social control operates through mutual accord of community members, mores and folkways, and religion; and authority rests in age, force, or wisdom. Gemeinschaft societies exhibit relatively slow social change, few specialized free-standing associations, rigid integration of subunits, and many universally accepted values, goals, and rules of conduct. These communities are traditionally closely related in both time and space; cooperation and coordinated action for community goals occur within a geographic community. Even so, the idea of Gemeinschaft may also refer to a pocket of community that exists as a community-of-interest; such groups would exhibit the characteristics of Gemeinschaft with the exception of those that relate directly to geographic location.

Gesellschaft societies, on the other hand, are characterized by city and national life in which convention, legislation, and public opinion control the social behavior of the population. Intellectual life centers around trade, industry, and science, and the "truths and opinions" of science pass into popular literature and the press, thus influencing public opinion. Social relations are marked by a large number and variety of specific associations and few universally-practiced behavioral codes. The instrumental nature of these

relations and the implied separation of interacting persons into limited and distinct roles leads to narrowly defined patterns of behavior which stress objective rights and overt performance. These relationships are artificial constructions which superficially resemble Gemeinschaft societies in that individuals peacefully live and interact together. However, the individual remains isolated; each person affirms the actions of others only as long as they can further his own interest. Thus, Gesellschaft typically implies the alienating experience that can accompany large and complex social organization (Toennies, 1955; Williams, 1970).

These concepts are simply ideal types; they merely sketch the outlines for types of social organization and thus function to locate particular social relations in some larger context. The distinction between community and society has little to do with the viewpoints or activities of specific individuals; it instead illustrates differences in the dominant paradigm around which a society may be organized.

Over the past few centuries, the dominant social paradigm of most Western societies has shifted from a Gemeinschaft model to one based on the characteristics of Gesellschaft. Early sociologists noted the trend toward increased social complexity, interdependence, functional specialization, and technological expansion, and attributed it to the unilinear progress of mankind

towards the peak of social evolution. The industrialized West was seen as the culmination of centuries of work aimed at creating a "better model" of society (Appelbaum, 1970).

Later theorists adopted this framework of increasing societal complexity with its concomitant interrelatedness, but rejected the social Darwinism inherent in the idea of progress. More emphasis was placed on the mechanisms that prompted the shift.

Emile Durkheim, for example, posited a shift in society from mechanical solidarity (characterized by a strong collective conscience and many shared beliefs among individuals) to organic solidarity (with numerous contractual relationships and the necessary interrelatedness of many unlike but mutually dependent individuals). This shift, which bears an obvious resemblance to Toennies' Gemeinschaft/Gesellschaft distinction, was attributed to an increased moral density; more people were interacting with one another because the size of the society had increased. As moral density increases, societies are broken into smaller units which recombine to re-form the larger group. After a certain point, however, mechanical solidarity ceases to provide sufficient means for integrating the diverse groups. The division of labor created by the formation of these groups must be countered by the ties formed through social exchanges, creating interdependence that extends

deeper and far beyond the moments during which the exchange takes place (Durkheim, 1933).

More recent work generally identifies the somewhat idealized image of the small town as the epitome of Gemeinschaft and has considered the scene of the large impersonal city as an apt example of Gesellschaft. However, although research into contemporary communities extends this line of research fundamental to sociology, there has been a conspicuous absence of research that clearly connects the processes of language and communication with the establishment and maintenance of community. Despite the importance of integrating the various subunits of a society, little attention has been paid to the point that the exchanges that provide the opportunity for such integration are based on communication. Communication functions as a major factor in reuniting the differentiated parts of society; it operates as social "glue."

Communication and Community Power Structure

Communication is intimately linked with community. Persons living in geographic or ideological proximity must develop some means for exchanging information about their shared environment, and as that environment grows more complex and differentiated, communication processes and techniques are also extended. Contemporary society is characterized by a web of communications technologies

(including both print and electronic media) that interact closely with the networks of personal communication that link together members of a community (Janowitz, 1952; Katz and Lazarsfeld, 1955).

As communities grow in size and complexity, decisions concerning the common environment must be made, and decision-making structures erected in response to recurring problems. The ability to make decisions on such matters comprises a significant component of power, and involves control over the definitions of reality held by those affected, however remotely, by its exercise. Access to information--an important aspect of power--is distributed unevenly in any social group, and the avenues for access compose a large portion of the institutional structure of power in communities. Thus, the power structure itself may be viewed as a communication process: "the social structure of community decision-making is the regularized pattern of communication and exchange of information pertinent to community affairs among community leaders" (Laumann, Marsden, and Galaskiewicz, 1977).

Research into questions of community has largely ignored the impact of communications on power, although many studies have made perfunctory note of its potential. The Lynds, in their classic studies of Middletown, for example, comment to some extent on communications in the city, but contribute little to an understanding of the

role of communication in integrating the differentiated segments of the community. Communication technologies are viewed as luxury items by both the Lynds and the residents of Middletown: telephones are removed when money is scarce, and radio, movies, and phonographs are all treated as non-essential leisure-time activities.

The Lynds tend to view communications media as inventions imported from without, alien forces that reshape the city. With the assistance of the automobile, communications technology contributes to a decline in the centrality of the home, new habits of dating, shopping, and consuming, and makes the relationship of the individual with entertainment a passive one. The standardization of the habits of Middletown's residents through their exposure to the reams of printed material, radio broadcasts, and films brings families together during the evening to some extent, but also serves to break leisure time into an individual or small group affair, offsetting the simultaneous trend toward organization marked by the rise of clubs and organizations. (Lynd and Lynd, 1929).

Their second study of Middletown, however, includes a clearer focus on the political implications of information flows through the community. Although the Lynds continue their attack on radio and film as burying the Middletown-of-the-past, they acknowledge that the importation of information from outside the community is not always an entirely harmful development. Since a local

family controls the local newspaper through a powerful stock interest and holds an additional measure of control over the dissemination of information to large groups through ownership of all the large meeting halls in town, alternative sources of information must be developed. This becomes especially important after it is discovered that the local newspaper and radio station have attempted to sway public opinion through selective reporting of news. The presence of national newspapers and radio networks averts a good deal of information distortion by bringing other viewpoints before the residents of Middletown.

This duality of nationalism and localism acts in two directions simultaneously. While Middletown's "sense of self" falters, with citizens identifying more and more with the characteristics of the national scene, the larger frame of reference binds together a community that is growing increasingly large and diversified. Communication thus is recognized as a means of integrating the community internally, by creating solidarity among members, and externally, by linking it to other communities (Lynd and Lynd, 1937).

The importance of communications has remained widely recognized, if briefly discussed, since that time, and communication has come to be considered an integral part of the power structure (Agger and Ostrom, 1956; Belknap and Smuckler, 1956). Power structure research

exploded into existence with the publication of Floyd Hunter's Community Power Structure in 1953, which defined the field in its own right, and began to narrow the focus on questions concerning the origin of public policy and strategic points of access to the power structure, rather than the broad emphasis on entire communities that had preceded the work (Domhoff, 1980; Walton, 1976).

While Hunter opens the book with a plea to strengthen the lines of communication between leaders and community members in a real way (lest democracy fall by the wayside), he tends to bypass any focused discussion of the interaction of community power structure with communication. Much of the attention he does pay to the issue concentrates on articles and editorials in the local newspaper, the role the printed press plays in getting information to the public, and the ways that gossip maintains power relationships in the community (Hunter, 1953).

Other researchers have followed Hunter's lead on the question of communication, and social research has concentrated on the impact of the mass media on public opinion; the pressures that the business community may exert over the press through their ties of ownership, friendship, and allocation of advertising; or descriptions of interpersonal relations among community leaders (Dahl, 1961; Gans, 1967; Rose, 1967).

Among recent works in the field, only one places

communication in a central role as a force influencing the community. Vidich and Bensman's Small Town in Mass Society concerns itself with the ways in which the mass media overwhelm local cultural forms. The balance of power in the community can and does vary with relatively slight shifts in the external situation. In this case, communications media are seen as facilitating external social integration at the price of internal identity. Even the title of the book indicates that the existence of a gemeinschaftliche community in contemporary society is an occurrence remarkable enough to be noteworthy (Vidich and Bensman, 1968).

Although community researchers have overlooked the importance of communication in recent years, the matter has moved to the fore. Networks of satellites, telephones, cable television, computers, and a host of other technologies now allow our communities-of-interest to span the globe. Community leadership depends increasingly on the skill of creating and utilizing diverse networks of people, organizations, and resources (Sarason, 1979).

The messages that are sent through these networks and the networks themselves combine to form an environment. This communication environment shapes our consciousness in the same way that the physical environment determines our sources of food and the types of activities we must perform in order to survive. It gives specific direction to the kinds of ideas, social attitudes,

definitions of reality, and intellectual capabilities that emerge in a culture (Ploman, 1975; Postman, 1979).

The Communication Environment in an Information Society

That communication environment takes on increased importance today as our culture moves into an economy where information is now visibly central to the mechanisms of economic and social exchange. Workers whose primary task is the production and sale of knowledge (scientists and teachers, for example), those who gather and disseminate information (secretaries and lawyers), and workers who operate the information machines that support those activities currently comprise about half the workforce. Information workers are beginning to hold many of the high status positions in society that landed and manufacturing elites held in previous eras.

Where preindustrial societies are extractive in nature (emphasizing agriculture, mining, and fishing), and industrial societies emphasize fabrication and manufacturing, post-industrial societies ("information societies") utilize telecommunications and computers to organize information. A post-industrial society has as its axial principle the centrality of theoretical knowledge and creates intellectual technologies (such as computer modelling and simulation) in order to find rational solutions to social as well as technical problems.

Services move from the industrial emphasis on transportation, finance, and personal services to human, technical, and professional services. Organized intelligence becomes the primary requisite for power. Increasingly sophisticated technology which requires greater investment of capital over long periods of time in order to support the specialized manpower that must be integrated into complex and interdependent organizations makes planning a necessity (Compaine, 1981; Dunn, 1982; Howkins, 1982; Molitor, 1981; Oettinger, 1980; Porat, 1980).

Although the shift to an information economy mainly involves changes in the economic and occupational structures of a society, it also raises questions concerning the distribution of power in society and the shared symbolism of culture. Having access to information is power, and control over the means of creating and disseminating information provides even more power. Power tends to gravitate into the hands of those who control information and can correlate it most rapidly (Bell, 1973; Galbraith, 1978; Goldsen, 1982).

Using the technology of the computer to create, disseminate, and organize information provides the potential for a number of alterations in this process. Depending on the ways in which control over computer technology is structured, computer-based information can either be a centralizing or a decentralizing factor.

Technology as Metaphor

The widespread use of computer terminals appears to decentralize information throughout society. However, information behaves as a recalcitrant economic good: it is inconsumable, individual, accumulative, and easy to copy or steal without the owner ever knowing of the intrusion. Unlike material goods, information can acquire additional utility with use, and information wealth is difficult to sequester, tax, or render equitable once it has been acquired. The only way to force information to behave as though it were a conventional economic good is by selling the material upon which the information is encoded (books, newspapers, record albums, videogame cartridges) rather than the information itself. Information resembles a catalyst; it promotes reactions and transformations without its own fundamental nature being altered in the process (in most cases) (Masuda, 1980; Robins and Webster, 1980; Smith, 1980a; Smith, 1980b; Thompson, 1980).

This function of information becomes even more important as we begin to use computers to transmit information across various sectors of society. Not only are computers technological artifacts that can impose what seem to be their own demands on societal structures; they are also information technologies, and thus have the potential to shape the ways in which we communicate.

Technologies, after all, are not simply neutral objects existing alone in the universe without any effect on their surroundings. Technologies are inherently social (and therefore political). Disregarding for the moment technologies that have been deliberately designed to facilitate some particular social behavior (such as Robert Moses' low-hanging bridges on Long Island designed to prohibit the use of the Long Island Parkway by public transportation), technologies extend beyond their obvious physical functions to encourage certain social behaviors.

Technology functions as a metaphoric statement about the relationship between humanity and the natural world, registering in physical form the powers of control that human civilization can display. A technology does not consist merely of physical machinery but rather serves as the physical embodiment of various sociocultural interactions. The real message of a technology is not what it actually does but rather the changes of scale, pace, or pattern that it introduces into human affairs. The social, political, and economic systems in which a technology is embedded shape the development of the technology at least as much as the hardware of the technology itself (McLuhan, 1964; Winner, 1980).

The role of technology in creating and inhibiting community has, like communication, been largely ignored. Although the technological base of a society profoundly affects the patterns of social existence and contributes

to the directions of social change, considerations of its relation to the ways people communicate and how those channels influence community structures have been largely peripheral.

Certainly, there have been acknowledgements of the importance of technology as a factor in the shift from Gemeinschaft to Gesellschaft forms of social organization. Statements such as the following are common: "The transformation from community to society was basically one of technological rationalization, institutional differentiation, and new interlocking patterns of coordination" (Stanley, 1978: 191). These point to the centrality of technology in the process through its provision of new arenas for social interaction such as the factory.

Technology can serve as a physical manifestation of an ideology. Its mere existence in such a state can help to spread that ideology to many other spheres of life. For example, the dominant form of technological development in Western culture for the past several centuries has been characterized by economic expansion, material repletion, scientific intelligence, and an emphasis on military superiority. This complex of ideologies and behaviors has furthered the development of technologies that serve those needs, and has taken precedence over both technologies and ideologies that stress alternative values.

The growth of such a technological-ideological

matrix is not unidirectional, of course; the general tendency has displayed certain trends towards an instrumental and rational world view that feeds back into the technology, facilitating continued developments. Much of this expansion may be attributed to the rising importance of technique, any standardized means for attaining a predetermined result. Through the spread of technique into a large number of fields, spontaneous and unreflective behavior is converted into deliberate and rational action. Members of contemporary societies may find themselves heavily reliant on technique, and by extension, on the technologies through which the goals that fuel its use are implemented (Ellul, 1964; Ellul, 1980; Habermas, 1970; Mumford, 1970; Stanley, 1978; Winner, 1977).

Computers play a significant role in this process, and current influences of computers on the ways in which people communicate in order to form communities stem from the historical roots of computing technology. The development of information technology since the Middle Ages has paralleled the growth of complex societal structures, and has underlined the differentiation and consequent interdependence within societies. Whether the labels Gemeinschaft and Gesellschaft, mechanical and organic solidarity, traditional and bureaucratic authority, ascription and achievement, or particularism and universalism are applied, the ultimate meaning remains the same. A social group moves from a small closely-knit

community to a large-scale, mass society where science and technology allow for greater degrees of control over the natural environment, and the mechanisms of social integration grow continually more complex and interdependent (Appelbaum, 1970; Habermas, 1970; Pappenheim, 1959; Williams, 1972).

The development of the computer not only illustrates this process, but in many ways has encouraged its unfolding. The extension of computing throughout most of history has been characterized by increased efficiency, of machines over human activity, the streamlining of warfare, and the growth of business and government. By extending control over information, predecessors to the modern computer facilitated the rational extension of human control in a variety of fields.

Building a Rational World-View

The history of computing begins with those anonymous innovators in early societies who introduced a sense of number and the concept of counting, developed notational systems, and explored the fundamentals of arithmetic. These activities all stem from the recognition that a number can be represented by some physical object, be it a pebble, scratches on parchment, a mechanical gear wheel, or a piece of magnetized plastic. These first forays into constructing calculating machines out

of tally sticks, knotted pieces of string, or beads strung on wires reflected an intellectual atmosphere marked by analysis, dissociation, and reduction. Early mathematicians thus provided both the fundamental tools and ways of thinking that led to the creation of more complicated arrangements for the mechanization of arithmetic (Evans, 1979; Juenger, 1949; Mumford, 1970).

Little changed through the Middle Ages, since the Hindu-Arabic zero had yet to fully penetrate European science, and the technological inadequacies of the period combined with a lack of funding to slow the development of computing machinery. The inventions of this period that did see completion contributed to the contraction of time and space, the standardization of products, regularization of time, and facilitated the transfer of human skill into machines that exhibited ever-increasing levels of sophistication and power. By the seventeenth century, Europe possessed three essential preconditions for a revolution in the development of calculating machinery: a strong demand for calculation, a high degree of technical skill, and considerable development of the physical sciences. After this period, the growth of computing remains closely linked with the expansion of trade, growth of government bureaucracy, and exploration and conquest in the social and intellectual domains (Lilley, 1965; Mowshowitz, 1976).

Many of these inventions stressed the greater

efficiency of machines over human action by simplifying then-complex arithmetic operations such as multiplication and division by automating the process with the aid of logarithmic tables. Many individuals already felt that calculating machines would free mankind for more important tasks. For example, Gottfried Wilhelm von Leibniz, referring to the benefits that astronomers could reap from using his 1694 invention of a calculating machine, stated "it is unworthy of excellent men to lose hours like slaves in the labor of calculation which could be safely relegated to anyone else if machines were used" (Goldstine, 1972: 8).

Few buyers were found for these early calculating machines, however, since the vagaries of gear technology combined with the high price demanded by their complexity worked against the establishment of a market. In addition, the clerks and accountants employed by potential buyers were concerned that automation would remove their jobs, so they pressured their employers to avoid the machines. In addition, the calculators needed frequent maintenance (Evans, 1981).

Several developments paved the way for a more favorable climate for the machines. Charles Babbage's design for the Analytical Engine served as a model for the contemporary general-purpose computer by separating the functions of programming from computer hardware, even though Babbage never managed to complete a working model.

Sudden advances in the field of automatic computation were aided by the improved machining and manufacturing skills facilitated by the Industrial Revolution. Now, boxes full of gears, cogs, and cams that interfaced with one another could be made. Further, the increased load on the business community made the climate of opinion toward mechanical computation more favorable (Evans, 1979; Evans, 1981; Harmon, 1975).

Demand for more efficient calculation increased throughout the nineteenth century, and the first successful calculator distributed commercially was Charles X. Thomas' Arithmometer, introduced in 1820. Although the machine was complicated and difficult to maintain, it paved the way for later counterparts. There was a veritable explosion of calculating machinery in the latter part of the century when Dorr E. Felt's Comptometer, first marketed in 1887, proved popular because of its reliability and (especially) the instruction booklet that accompanied the device. Felt educated the American public in basic arithmetic operations, derivations of square and cube roots, calculation of interest, discounts, and exchange of foreign currency. The first practical machine faster than an experienced accountant, the Comptometer could add four columns of figures at a time. Cash registers also became popular during this period, including the first products of the National Cash Register Company (NCR) and James Ritty's "Incorruptible Cashier."

A plethora of small calculators entered the market in the 1870s and 1880s, and the technology improved rapidly (Evans, 1979; Harmon, 1975).

Governmental pressures for more statistics concerning citizens, particularly in the United States, led to an increased interest in speedier and more accurate methods of tabulation. By the 1880 census, the government required over 50,000 individuals to collect and analyze the data from the 34 questions asked, and the effort cost over eleven million dollars. Anxious to avoid similar problems with the 1890 census, the government held a contest to encourage inventors to devise a solution to the information overload. Herman Hollerith's electrical tabulating machine operated by punched cards won easily. An experienced clerk operating the machine could tabulate between 8000 and 10,000 punched cards in a six-and-a-half hour workday, and data from the 1890 census were tabulated in just over two months (Evans, 1979; Merriam, 1903).

Public demand for calculation increased in the early part of the twentieth century, and when E.G. Fischer and R.A. Harris introduced a tide predictor designed for the U.S. Coast and Geodetic Survey in 1914, Scientific American hailed the "great brass brain" as the wave of the future. During the first third of the century, punched card machines based on Hollerith's idea were modified and improved, and World War I reinforced an awareness of the need for a faster means of calculating (due to the need

to compute missile trajectories). Although no computing devices were completed during the war, several postwar developments (such as the development of electrical circuitry and use of telephone relays to convert decimal numbers to binary form) paved the way for the rapid developments in computer technology that dramatically altered military planning in the next decades.

Although technical advances would have permitted a practical electronic computer to have been built any time after 1919, World War II intensified efforts to perform accurate calculations quickly. Britain, Germany, and the United States led the race for more efficient mechanical calculators, putting aside the less immediately practical task of developing an electronic computer. Cryptography research offered a major incentive for research into computing, as did the need for calculating gunnery tables quickly. The Manhattan Project led to the construction of an electromechanical computer, which became operational in 1943, the Automatic Sequence Controlled Calculator (known popularly as the "Mark I").

The Mark I was designed in conjunction with IBM, and then-president Thomas J. Watson insisted that the machine conform to the "IBM image" by being clothed in the streamlined style of stainless steel and glass to emphasize its efficiency.

To add to the sense of clinical perfection, it was staffed and run by engineers who had been drafted into the Navy along with Aiken (the

director of the project). They were expected to behave like Navy personnel, and marched smartly back and forth across the polished floor, saluting each other and, according to a Harvard scientist, who despite his scruffy appearance was once allowed in to have a peep, 'appearing to operate the thing while at attention' (Evans, 1979: 32-33).

The first truly electronic computer to be completed was the Electronic Numerical Integrator and Calculator (ENIAC), built in 1946 at the University of Pennsylvania. Until ENIAC, researchers had wanted the advantages of digital processing (increased accuracy, greater adaptability, and more decimal places to work with), but analog computers had proved faster. ENIAC changed that: the hundred-foot-long, 90 ton machine that consumed 140 kilowatts of power an hour and contained over 18,000 vacuum tubes (one blew every seven seconds), somehow managed to complete 40 multiplications per second and had memory capabilities equivalent to one of today's small desktop computers. ENIAC dramatically cut the time required for calculation of ballistics problems, and formed the foundation for later developments in computing (Harmon, 1975; Mowshowitz, 1976).

ENIAC also marked the end of an era. Until the end of World War II, computing and calculating machines were costly and geared towards government, science, and the military. After ENIAC, a surge in technological development opened computing to the business community, and eventually the private individual.

CHAPTER THREE

BRINGING COMPUTER POWER TO THE PUBLIC

As the immediate military need for speedy calculation ended with the war, the "space race" and commercial interests spread the demand for computers into other fields. The previous emphasis on building unique forms of computer hardware was joined by an interest in developing software and programming languages that gave the machines a new versatility. Computers were no longer viewed as mere number processors but rather as data processors that could perform a variety of tasks in many settings.

Since the computers of this time were delicate instruments that required a special environment, centralized computer rooms were set up to care for the machines. These air-conditioned, dust- and pollen-free fortresses (usually located at a distance from other offices) were guarded by the computer operators and programmers. Such experts generally represented the only knowledge about computers in the organization, and thus worked closely with upper-level executives concerning the automation of business functions. This centralized control over the activities of many people in the hands of a few, and was further extended by the increase in the scale of production

processes and organizational hierarchy that the computer provided (Etzkowitz, 1982; McDermott, 1969; Vallee, 1982).

As computers grew more common, they became harder and terminals could be located at a distance from the central computer. The ability to distribute computer power among many users working independently of one another with unrelated programs and data became practical and seemed to decentralize computing. Power over information processing and retrieval remained with those in control of the central computer, however. Large time-sharing systems became the dominant form of computer use during the 1960s, and as the technology improved, costs dropped dramatically. For example, a timesharing computer at Manchester University that cost 750 pounds per hour in 1962 only charged about 20 pounds per hour by 1972 (Goldstine, 1972; Sackman, 1972).

Where the earlier conception of calculating machinery as a mechanical tool had encouraged a conceptual dichotomy between humans and machines, the information-and-control interpretation of cybernetics led to a view of the organic continuity between people and computers, and soon the idea of linking computers to one another for communication began to interest people in many fields. A major shift from viewing the computer as a mere data processor to seeing it as a potential mediator of social interaction came when the Air Force installed Semi-Automatic Ground Environment (SAGE) in 1958. The first real-time, computer-

aided defense project, SAGE was supposed to protect the United States from a surprise air attack by detecting, identifying, and destroying manned enemy bombers over North American airspace. It was the first effort to link together digital computers for command and control. The other branches of the armed services soon followed with their own systems, but these were dismantled around 1963, when it became clear SAGE was powerless against the ICBM (Parkhill, 1966; Sackman, 1971; Sackman, 1972). The concept of linking military personnel via computer remained, however, and the Advanced Research Projects Agency of the Department of Defense set up the ARPANET in 1962. By the mid-seventies, nearly 30 Army computer sites were connected via telephone lines.

At the same time, the Office of Emergency Preparedness developed the Emergency Management Information System and Reference Index (EMISARI), a full-scale computerized conferencing system designed for communication during a crisis. Now known as the Resource Interruption Management System (RIMS), EMISARI serves as the first non-military example of the use of computers to aid human communication (Hiltz and Turoff, 1978; Rice, 1980).

Computer networking became popular as a result of the success of these early efforts. Experiments designed to test the concept of computer networking linked computers together to share memory capacity and transmit messages. Control Data Corporation linked 36 of their major

data centers together with a system that resembled ARPANET. The New Jersey Institute of Technology's Electronic Information Exchange System (EIES) allowed academic researchers to confer with one another through computers, and businesses began to contemplate the potential of extending computer power to regional offices instead of concentrating it in one place (Hiltz and Turoff, 1978; Mowshowitz, 1983).

Large mainframe computers and minicomputers were widely used in business, education, health care, and the criminal justice system during the 1960s. Improvements in the technology of linking computers together (such as the standardization of information protocols and the development of packet switching) and the falling prices of memory and computer components led to a rise in computer networking (Godfrey and Parkhill, 1979; Gruenberger, 1971; Martin, 1978; Mowshowitz, 1976; Rice, 1980; Sackman, 1971).

The technological breakthrough that firmly established the computer as a potential mediator of personal networks of communication resulted from the Intel Corporation's successful development of the computer-on-a-chip in 1971. Originally planned for use in cash registers and vending machines, these microprocessor circuits also formed the basis for the microcomputer. With microminaturization, the computer chip offers jumps in complexity, flexibility, and new powers of control along with reduct-

ions in size, energy use, and cost. During 1980, for example, microprocessor costs declined at an annual rate of 22%, information storage (memory) costs fell by 40%, and communications hardware dropped at a rate of 11%. As costs declined, sales grew dramatically (Bell, 1977; Hiltz and Turoff, 1978; Molitor, 1981; Weizenbaum, 1976; Wicklein, 1981).

By 1975, Micro Instrumentation and Telemetry Circuits (MITS) had advertised their Altair computer in Popular Electronics. The advertising appeal: build the computer at home for \$240. The firm received 200 orders the day after the magazine hit the newsstands. Within two years, over 50,000 prepackaged home computers representing 50 brands could be found lurking in dens, living rooms, and basements. These microcomputers share certain characteristics: they are based on an eight or 16 bit microprocessor, cost less than \$15,000, have at least 4K bytes of memory, and include the ability to attach peripheral equipment (such as a printer) to them (LINK, 1982; Nelson, 1977).

The microcomputer seemed to offer the first major breakthrough in computing technology since the 1950s. The small but powerful machines threatened to decentralize computing, and computer hobbyists celebrated the micro as the modern-day six-gun that would eliminate the cadre of programmer-priests that had developed during the days of centralized electronic computing. In fact,

organizations that had established computing early in the 1960s faced several problems with the advent of microcomputers: their high levels of automation and management policies emphasizing technical sophistication made it difficult for them to adapt to the new, small, more affordable computers on the market (Kraemer and King, 1981).

Of the world's 1.5 million "personal" computers, approximately 80% are located in the United States. About half (54%) are used for business and professional applications, another 24% for individual home or hobby use, and the rest provide educational, scientific, and other services. But although nearly 90% of the school-age population has played with microchip-based technology via videogames, less than 5% has actually programmed a computer (Cavanaugh, 1982; LINK, 1982). The off-the-shelf computer systems that most consumers purchase today are turnkey systems, requiring only a limited understanding of how the technology works. While the early microcomputer hobbyists were content to spend time puttering with equipment and inventing new programs, today's computer users purchase prepackaged programs that enable them to perform tasks such as balancing their checkbooks more efficiently.

Computers as Mass Media

By the late 1970s, some timesharing firms took advantage of the growing market that wanted to consume computer-based information and began offering services that linked hundreds of these casual microcomputer users to a central computer to peruse large databanks of information, play games, and "talk" with one another. Calling themselves "information utilities," these services coordinate the physically decentralized users and provide channels for communication among them. Databases can include everything from the unedited UPI newswire to wines of the world, from computerized airline reservations to electronic I Ching readings, from business programs to games for preschoolers.

An information utility consists of a central facility with a large-scale computer with extensive memory and many program packages. It is capable of handling many geographically dispersed users simultaneously, its services are available at any time, and the fees charged are low enough to allow for day-to-day use of the system. In short, users of an information utility have available the same range of facilities and computer capacity at a remote station that they could expect as the sole operator of a private computer have the same capabilities as that of the utility's host computer (Parkhill, 1966; Masuda, 1980).

Information utilities must be easy to use. Users are often novices at computing, so the system should be sympathetic to users' errors and the need for computer expertise should be kept at a minimum. At the same time, the information utility must accomodate experienced users with sophisticated demands. Most currently operating information utilities handle the problem by providing separate tiers of service for experts and novices (Bowes, 1980; Hiltz and Turoff, 1978; Sachs, 1980).

Information utilities thus represent a "mass media" approach to computer technology. In the same way that network television attempts to provide entertainment programming that will appeal to a broad segment of the American public, the information utilities present a large number and variety of databases in order to attract the greatest numbers of subscribers.

The term "mass" in this sense refers not to the traditional concept of the "mass audience," but rather to the process of communication that takes place. While elements of a mass audience are present--a large, unorganized aggregation of people from all social strata, largely anonymous, with little interaction among members, exists--this description of a social group does not sufficiently depict the nature of the mass model for computerized communication (Blumer, 1966; Freidson, 1953).

In this case, "mass" describes a communication system, an intricate matrix of channels in which new patterns of

behavior arise. Complex formal organizations typically form the foundation for the operation of mass communications, and thus the channels of communication between communicator and audience tend to be highly impersonal (Escarpit, 1977; McQuail, 1969).

Mass communication arises as a function of complex Gesellschaft societies, and provides a new framework for communication for participants.

For the modern technological means of communication did not simply extend the possible size of a communicative network, adding ever more rapid distributive networks, but they also radically altered the experience of mass communication, linking it, through the personalized styles of television, radio, and newspaper address, to the registers and repertoires of general social discourse (Corner, 1979: 30).

Such experience is extended today by the emergence of computer networks that follow the mass model.

By offering computer services to the "general public," information utilities provide new channels for communication and the opportunity for participants to form communities through a computer connection. The leading consumer-oriented information utilities, the Source and CompuServe Information Service (CIS) illustrate the application of the mass approach to computing technology.

Source Telecomputing

When Telecomputing Corporation of America (TCA)

introduced its information networking product, the Source, in mid-1979, the idea was to utilize computer power that was idle after "prime time" business hours. Since computer power could be purchased at relatively low cost during those hours, the Source could offer computer access to individuals at a reasonable price, thereby creating a "people's timesharing network," a new national information utility.

The popularity of the Source soon exceeded the technical capabilities of the information network, and the first eighteen months of the Source's existence were marked by frequent difficulties in actually delivering the service as promised to subscribers. Even so, more than 5000 subscribers signed up within a year (Beckman, 1981).

TCA provided the first home information retrieval system in the United States, but financial problems--including \$5 million worth of debts to more than 300 creditors--brought hard times to the fledgling information utility. Progenitor William von Meister was ousted by Jack R. Taub, who owned 42.5% of the stock in the company. In the midst of corporate in-fighting, Taub took steps to further remove the Source from TCA and Digital Broadcasting, von Meister's firm and the Source's parent. Taub's efforts to keep the Source afloat sparked a good bit of resentment, especially when he ousted 45 employees on the day he took over. Other employees charge that company executives often gained access to individual

subscriber files despite promises to maintain the privacy rights of users of the Source. Current Source management denies those allegations categorically (Anonymous, 1980).

In September 1980, the Reader's Digest Association purchased a majority interest in the firm, and changed the name from TCA to Source Telecomputing Corporation (STC). Later that year, Reader's Digest purchased additional stock, increasing its ownership to 80%, but the Source's history of management turmoil and financial loss has still continued to some extent. In mid-1982, Graeme G. Keeping, the Reader's Digest executive sent to head STC, and three other top executives resigned as a result of internal disagreements and continuing losses. Reader's Digest has made improvements in the Source by increasing the staff to more than 125 from 50, adding two new Prime 750 computers (thus providing an important backup service and reducing the chances of service interruption), and developing new software that makes the service easier to use.

By connecting their host computers with the Tymnet and Telenet computer communications networks, the Source now provides access to subscribers in most major cities. At present, the Source consists of over 50 separate databases, which include over 1400 information and communication services for home, business, and institutional use. About 28,000 people currently subscribe, paying a \$100 fee to join the service and \$5.75 hourly to access the

Source during evening and weekend hours. Use of the service after midnight drops the fee to \$4.25 an hour, and the system can be accessed during the prime daytime hours for \$18 per hour. A \$10 minimum monthly fee is charged.

The Source provides computer-based message services such as electronic mail and "voicegram," where the user can call a toll-free number and leave messages. Proprietary databases occupy a good proportion of the computer's memory. The unedited UPI wire, New York Times Consumer Data Base, information on public events, tax preparation guides, packages of educational programs, a database management system, text editor, statistical packages, and others remain popular. Classic timesharing and consumer products (such as games, teleshopping, and computerized posters) are also available. Source *PLUS* services, which cost more to receive, were added after subscribers requested them. Among the value-added products offered are Legi-Slate, which tracks Congressional action; Compu-Star, an electronic shopping discount service featuring instant ordering capabilities for over 30,000 items; Management Contents, which abstracts articles from the 27 leading business publications; Commodity News Service, with periodic updates on the commodities market; and Media General, with detailed background information on over 3100 stocks, updated weekly.

The Source is currently diversifying its offerings.

As well as the Source itself, Source-Cable (a similar package designed to be operated through cable television systems) is being marketed. The Source library services program applies STC's technology to a variety of program library needs, and the development of networking software for hardware manufacturers remains an important project (Beckman, 1982).

In addition to periodic newsletters updating subscribers on changes in the databases available, Source Telecomputing publishes a bimonthly magazine, Sourceworld. The magazine provides commentary about the Source's offerings, interviews with subscribers and STC executives, and advertisements for computer-related products.

Source management expects that the expansion will continue in the future. In late 1982, the organization installed a new computer facility that will enable the service to expand to 250,000 customers with no major additions to their hardware. Expansion of the databases also continues to offer strong motivation. The Source is moving more towards business and professional use, particularly during daytime hours. Since the Source fell short of its goal of 60,000 users by early 1982, only reaching the 20,000 mark, management has decided that the home market is not ready for extensive development. Services aimed at business users, who can better afford to pay the higher rates during daytime hours, will be emphasized. Specialized business computer services are likely

to continue to provide stiff competition, however (Pollack, 1982).

The needs of the home user, however, will not be ignored because of this emphasis.. Source-Cable, which is publicized as "a unique information service that turns an ordinary TV into a fountain of knowledge," will offer cable subscribers a wide range of Source services in a standard videotex format. The Source hopes to make this a common service offered by cable operators in the future.

As "America's first information utility," the Source continues its attempt to include something for everyone in its databases while at the same time offending no one. It promises indeed to become the Reader's Digest of the information age.

CompuServe Information Service

CompuServe Information Service (CIS) also offers a comprehensive home information utility service to owners of personal computers or videotex terminals. The Columbus, Ohio-based firm strives to provide a wide range of easy-to-use information and telecommunications services to its customers at a reasonable price.

CIS is a division of a larger computer corporation, CompuServe Incorporated, which in turn is an independent public firm owned by H & R Block. CompuServe Inc. is

comprised of three divisions: the Remote Computing Service (a classic timesharing service which accounts for 90% of the firm's business), CompuServe Network Services (the company's newest division which offers a value-added networking service for computer users not necessarily engaged in a timesharing relationship with the firm), and CIS. In all, CompuServe employs approximately 450 people. The firm has been in business since 1969, and the Remote Computing Service is the company's oldest and most significant business unit. Application programs are available for banking management, financial planning, and analysis, database management, R & D, computer graphics, engineering, and electronic mail. Over 700 major corporations, financial institutions, and government agencies use CompuServe's remote timesharing service. By comparison, the Information Service Division provides a relatively small share of the firm's profits.

CIS offers a consumer-oriented information service. It was established in mid-1979 to provide nonprime-time access to the company's computers, and began with 1200 customers who accessed some applications packages and videotex information. Currently, the service has over 32,000 subscribers and is marketed primarily through Radio Shack stores. CompuServe diversified further in 1979 by adding MicroNET, designed as a development area for computer professionals of hobbyists. MicroNET provides 128K of workspace to subscribers without the usual extra

charge, thus enabling small-scale users whose computing needs exceed the bounds of their machinery to utilize CompuServe's computing power.

In 1980, CompuServe set up the Information Services Division to offer a total home computer service package, and MicroNET and CIS were merged. Although many CIS users do not utilize MicroNET, since they have no desire to do complex programming or don't have the expertise to do so, a recent survey of subscribers indicated that 48% wanted to have the capability to run their own programs using CompuServe (Keener, 1982; Meier, 1982a; Meier, 1982b; CompuServe Information Service, 1982).

Currently, CIS operates its system primarily during evening and weekend hours, charging customers \$5.00 an hour. No minimum monthly fee is charged, and users are asked to pay \$19.95 to join the service. It is possible to connect with the system through Tymnet lines during the day, but the cost rises to \$22.50 per hour, with a two hour minimum. In that way, CIS management encourages people to access the computer when it is not being used during the prime business hours when the Remote Computing Division needs more computing power.

Users are offered a wide variety of information and electronic services. The conventional videotex services such as news, sports, travel, business, and consumer information all appear, as do games and educational programs. Other databases include advice from Dear Lore

(an electronic Ann Landers), "Ask Aunt Nettie" (a humorous question-and-answer service), and a continually expanding range of other choices. CIS recently completed a trial utilizing eleven newspapers which provided online editions. Although a few have decided to continue the service, John Meier (Vice President and General Manager of the Information Services Division) feels the firm has learned enough about electronic news delivery to move into a second phase of news delivery on its own. Electronic banking is available through the Shawmut Bank of Boston and the Huntington National Bank of Columbus, and teleshopping is already a popular database service. CIS recently signed an agreement with the World Book Encyclopedia to provide an online electronic version of the encyclopedia.

CIS also provides the opportunity for users to communicate with one another through electronic mail, online conversations, bulletin boards, groups and clubs, and a simulation of the eleven meter Citizen's Band radio. Communications are one of the fastest-growing areas of the database.

In addition, CIS publishes Today magazine, which discusses various aspects of the service and often prints interviews with users. Previously a quarterly, the magazine began bimonthly publication in mid-1982. The 60,000 copies of each issue are distributed free to users and at conferences. CIS subscribers also receive a periodic

newsletter discussing new features of the database. An up-to-date version of the CIS index typically occupies much of the newsletter (Hamrick, 1982).

CIS management hopes to expand the available services and offer a greater array of information services to the public. In the near future, more entertainment and games that involve several players participating simultaneously are expected to appear online, and an increased number of communications services will be added. Additional software oriented towards business users (including statistical analysis, financial planning, and market research packages) is being prepared in order to appeal to more business users of personal computers. The recent addition of the World Book Encyclopedia implies that CIS will be expanding its educational databases, and a number of travel and electronic airline guides have already been added. More electronic banking and retail transaction services are planned for the more distant future (Meier, 1982a).

In short, CIS will continue to provide "traditional" computer services to the general public along with services designed to create a wider consumer market. CIS presents itself as a friendly medium; Meier describes some of the communication services as "wrapping computers in something that's warm and fuzzy and takes the edge off the technology" (Meier, 1982a). Information services such as CIS may indeed function to ease people into the information age in a non-threatening manner.

Extending the trend

Although the Source and CompuServe offer the most popular information services accessed by personal computer owners, wide-scale use of information utilities in the home awaits the development of a broader market made up of people who are familiar with such systems and who have ready access to computer terminals. A central question concerning the evolution of information utility services over the next few years involves the location of control over the system. Not only do the questions of overall placement of the information utility in the regulatory structure have to be determined, but the internal regulation of database content must be clarified (Campbell and Thomas, 1981; Hiltz and Turoff, 1978; Kleiner, 1980; LINK, 1980).

CompuServe and the Source represent a model of technical development marked by a commercial ideology: they operate as profit making organizations dependent on their appeal to a mass market of information consumers. Each maintains control over information retrieval by locating the databases in a large central computer in order to facilitate access and billing. At the same time that this process is centralized, however, these services also provide a forum for decentralized communication over a wide geographic area.

As the mass computer networks spread across the continent, smaller local groups are beginning to develop

their own community-based computer services that locate control over both hardware and software in the hands of members of the community. Just as the mass services offer a popular counterpart to the "traditional" timesharing services, the community systems offer a small-scale local alternative that complements the national focus of services such as CompuServe and the Source.

These smaller local groups also appear to extend the trend toward decentralization and popularization of computing technology that has become evident in recent years. Not only are users decentralized through their use of the computer, but now each local group operates as an independent unit with no central leadership linking the various groups together.

CHAPTER FOUR

VERNACULAR APPROACHES TO COMPUTER TECHNOLOGY

While the mass-oriented computer networks aim at a mass market that would penetrate all sectors of society, several local groups are trying to build their own networks on a smaller scale. Often, these efforts are guided by the concepts of appropriate (or alternative) technology.

This frame of reference stems from the recognition that, once they are in place, technologies shape everyday life by altering the fundamental patterns by which people conduct their daily activities. Alternative technologists distinguish between two classes of technology: "hard" and "soft." Hard technologies include those that emphasize mass production, high degrees of specialization, alienation from nature, are capital intensive, centralized, complicated, reductionistic, and demand expertise from the operator or user. Soft technology, on the other hand, emphasizes humans above machines, stresses low specialization, integration with nature, is labor intensive, decentralized, small, holistic in approach, and easy to understand.

Within this framework, hard technology (often equated with high technology) is seen as instituting ever more

pleasant and subtle forms of social control through a system of domination which alters the social bases of power, replacing personal dependency relationships (e.g., serf/lord) with dependencies based on an impersonal "order of things" (such as "the economy"). Alternative technologists thus see personal responsibility over technology as crucial, and emphasize user control. The people affected by a technology are included in the processes of developing, implementing, and regulating the technology both directly and through agents under their control in order to ensure that the technology remains subservient to the needs and goals of the humans who use it (Carroll, 1961; Clarke, 1976; Dickson, 1974; Etzkowitz, 1982; Henderson, 1978; Hess, 1979; Illich, 1973; Lovins, 1976; Marcuse, 1964; Reich, 1970; Roszak, 1969; Schumacher, 1973; Winner, 1979).

These values are mirrored in an increasingly common means of communicating among proponents of various cultural alternatives: networking. Networkers make connections between people, or between people and resources, and networking as an activity has grown in the past decade due to the fragmentation of the counterculture into many smaller special-interest groups (Haight, 1981; Johnson, 1980).

Networks can be thought of as being comprised of people and organizations that simultaneously function as independent wholes and interdependent parts. Networks operate with a decentralized structure characterized by the coordination of many points of activity, and distribute

power and responsibility throughout the network. All levels of structure and function are integrated and the relationship between them is nonhierarchical in nature. Interpersonal relationships are valued above the product produced; people are considered more valuable than the paper they handle. Networks typically have no distinct boundaries, balance the integrity of personal worth and collective purpose and cohere through the shared values of members. Networks are often seen as antidotes to alienation, their purpose being mutual support and enrichment, empowerment of the individual, and cooperation (Ferguson, 1980; Hine, 1979; Light, 1981; Lipnack and Stamps, 1982).

What distinguishes alternative technology and networking is not a specific set of tools or techniques but rather the general approach taken to tools and techniques. Each functions as an indicator of a social movement that utilizes certain technological pathways in order to achieve some goal. The importance of alternative technology and networking arises from the process that underlies each. Both depend on a participatory decision process, rather than decision-making imposed by some external agency.

In this way, they are like vernacular languages, those word and speech patterns that grow from the people themselves and that shape how people actually live and govern their own lives. "Vernacular" comes from an

Indo-Germanic root that implies 'rootedness' and 'abode.' Vernaculum as a Latin word was used for whatever was homebred, homespun, homegrown, or homemade, as opposed to what was obtained in formal exchange" (Illich, 1980: 24).

The Roman usage of vernacular implied that sustenance derived from reciprocity patterns embedded in every aspect of an individual's life (as opposed to those gained through an exchange relationship or through vertical distribution through society); but over time the definition has been limited largely to references to speech. "Vernacular" in English means speech made up of the words and patterns grown on the speaker's own ground, as opposed to those transported from without (Illich, 1980).

Yet the definition need not remain so limited. The idea of the vernacular has been applied to folk art and even the technologies utilized by the mythical "common man," especially those of the American people. These "unself-consciousness efforts of the common people to create satisfying patterns out of the elements of the environment" extend the concept of the vernacular to include certain arrangements of technology (Kouwenhoven, 1948).

Certainly, the computer networks formed by small community-oriented groups qualify as vernacular approaches to computer technology. In each case, these groups represent efforts that grew out of the community itself, and are carried out by community members in the context

of their everyday lives. Four groups illustrate the range of vernacular approaches to computing technology: the CommuniTree Group, ComputerTown USA, the Office for Open Network, and the Community Memory Project.

The CommuniTree Group

Dean Gengle, president of the CommuniTree Group, describes the goal of his organization as "arming the general public with computer power." He works toward that goal by marketing low-cost computer conferencing software designed to encourage the formation of special interest networks. The "conference tree" that Gengle sells allows users to command the computer by using everyday English words like "read" and "browse," thus enabling individuals and groups with little technical expertise to take advantage of computers. The \$120 software package provides a low-cost alternative to systems manufactured by major computer firms.

The CommuniTree Group operates as a profit-making organization that upholds New Age values, such as extending computer power to socially, economically, and technologically disenfranchised sectors of the population. Gengle decided to make the system extremely easy to use because he grew frustrated at demonstrating dial-in bulletin board services that were so complicated that the new users couldn't have any hands-on experience.

Gengle's public demonstrations of CommuniTree software reflect this orientation: along with the sleek technical presentation of his Apple computer, he includes hand-drawn placards that explain the process so that all sectors of the audience feel comfortable with his presentation (Gengle, 1981b).

Two types of groups currently use CommuniTree software: organizations wishing to offer free public access computer bulletin board systems and private individuals or groups wishing to set up limited-access computer networking systems. At present, ten public groups and about the same number of private groups have established networks. Most of these groups are located in California, but a few have begun to be scattered around the country. One small organization uses CommuniTree software to publish its newsletter online. A corporate supervisor uses a Tree to make daily assignments for his field crews, take reports from them, and co-plan future work with others. One individual has set up a private electronic mail network for her friends, and an interactive technical forum for programmers specializing in the FORTH computer language is active (Gengle, 1982b). This discussion concentrates only on public groups, not on these private efforts.

The CommuniTree Group operates as a distinctly New Age organization. The system manual not only explains the appropriate use of commands; it also places computer technology in context by including lengthy sections dis-

cussing Gengle's views of computers, the history of computing, and the role of Gaia the Earth Goddess in contemporary society. Readers are invited to experiment throughout: one suggestion asks people who don't program computers to take a programmer out to lunch and ask whether programming is an art or a science. Similarly, programmers are requested to take an artist to lunch and ask if life imitates art or vice versa (Gengle, 1981a). Gengle explains that, as a New Age organization, CommuniTree is concerned with creating something valuable for people and putting its values at the fore, so that people are aware of where the company stands on issues such as nuclear war. Some of those values include small-scale computing, off-the-shelf hardware and software, software compatible with a variety of machines, a community/special interest orientation, appropriate technology, and information independence.

Gengle disagrees with the mass market approach to information exemplified by services like the Source and CompuServe. He points out that information utilities operate on a one-to-many basis, and the kinds and amounts of information included are determined by the owners of the system. Communication is an aesthetic act, he claims, and therefore information environments can't be mass produced. Gengle's concern is that individuals, groups, nonprofit organizations, and small companies have a chance to set up their own small-scale information systems.

The possibility of using computers to enhance local communication intrigues Gengle. He notes that telecommunication allows a single individual to create a potentially vast network of communicating (and therefore cooperating) people, and he sees this as the first stage in a convergence of technologies that will eventually encompass currently separated media, forming an "electronic media membrane" that surrounds the community.

While the computer is as central to CommuniTree's business as it is to the mass-oriented systems, Gengle's view of it is couched in the New Age values he espouses. If using a computer happened to contradict those values--if it was not being used in a manner appropriate for the situation, for example--the importance of the computer would be treated as subordinate to the other values.

Expansion of the CommuniTree system is Gengle's major goal at present. He plans to establish Trees in each of the 40 major metropolitan areas in the near future. This Flagship network would be used to send and receive messages relevant to users and potential users of CommuniTree systems and functions as a local computerized bulletin board (Gengle, 1982a).

Despite his firm's emphasis on the sale of his low-cost computer software, however, Gengle's primary concern continues to be the extension of the values underlying his organization. His concern about the quality of the information environment leads him to keep the cost of

his software down and to provide the local community with computer orientation sessions that are not directly linked with sales of software. He sees the potential for using computers to link citizens together and provide a balance for the large-scale centralized uses of computers.

Without aware and sustained counter attention from network-based private citizens interested in preserving their liberties and their privacy, we might all wake up one morning to find ourselves in a vast computer-administered prison from which there is no escape and in which the phrase 'democratic process' is semantically empty (Gengle, 1981a: 9).

Gengle sees the establishment of a nationwide network of CommuniTrees as one means of defending ourselves against such an outcome.

ComputerTown USA

A ComputerTown consists of a group of people who join together in an effort to become computer literate. It can encompass many things: children or adults playing computer games, learning about programming, word processing, or simply informally playing with computers. The concept emerged from earlier projects designed to facilitate public use of computers.

ComputerTown USA (CTUSA) itself grew from the People's Computer Company (PCC), which was founded in 1972 in order to demystify computers by teaching people how to use them. Both PCC and the Whole Earth Catalog were offshoots of

the Portola Institute of Menlo Park, an organization devoted to investigating and promoting the idea of alternative technology. Bob Albrecht founded PCC as a non-profit, educational corporation concentrating on small personal computers that are affordable and simple to use. In an effort to spread knowledge about computers, the group publishes books and magazines and teaches informal classes. Until recently, PCC published Recreational Computing, a magazine for novice home computer users, but was forced out of the market by the flock of new computer magazines that has swamped the newsstands in the past two years. PCC continues to publish Dr. Dobb's Journal of Computer Calisthenics and Orthodontia for the more experienced user, and it has in the past published a newspaper, operated a neighborhood computer center, a small-order bookstore, and a computer van.

In addition, PCC has formed a division consisting of the PCNET Project, which oversees three different activities surrounding a central goal of making low-cost computer communication available to everyone. The most significant project is the Personal Computer Network (PCNET) "protocol," a method by which any personal computer can telephone a textual message to any other personal computer automatically, detecting and correcting any errors that might occur due to interference in the telephone system. Another project involves the development of an electronic mail system similar to a community bulletin board system in general functioning and command structure.

A unique subsidiary of People's Computer Company is a National Science Foundation (NSF)-funded project designed to bring computer literacy to the entire community of Menlo Park. ComputerTown USA acts as a focus for such activities in that community and is beginning to establish links with similar projects in this country and Great Britain.

ComputerTown USA began in 1978 with the work of PCC's Bob Albrecht and Ramon Zamora, the present director of CTUSA. Both were writing books instructing beginners how to program home computers. They began to bring their own computers to public places in order to observe ordinary people exploring the technology for the first time. The experience fascinated them, and turned into a hobby which led them to bring computers into Girl Scout troops, bookstores, and parks. In addition, several people in the area were operating storefront computer companies, including the LO*OP center in Sonoma County run by current CTUSA technical director Liza Loop. In short, CTUSA was merely a formalized extension of the activities that staff members had been doing previously anyway (ComputerTown USA, 1982; Loop, 1982).

In the spring of 1980, the National Science Foundation awarded Zamora \$224,000 over a three-year period to develop the Menlo Park site and disseminate a model for teaching computer literacy. With the arrival of CTUSA as a formal setting, Albrecht and Zamora stopped carrying

their computers around with them and began to look for places where they could set them up so that users could have hands-on experience at any time. In addition, CTUSA had received a few computers through individual and corporate donations and loans, and often loaned these to individual groups on a short-term basis. Groups who wanted long-term access to computers were aided in finding groups to borrow them from or in purchasing their own.

Today, CTUSA functions as an umbrella organization for many local groups that run their own computer literacy projects. Each local ComputerTown decides what activities it will provide; the Menlo Park site merely serves as a clearinghouse for information of interest to people working in the field.

ComputerTown/Menlo Park currently supplies public access computing in the Menlo Park Library, the Little House Senior Center, the Herbert Hoover Boys' Club, and the Palo Alto Junior Museum. Atari 400/800, TRS-80, and Commodore PET computers are frequently used, although others have been introduced on occasion. Over the last two years, CT/Menlo Park has offered workshops, classes, playdays, demonstrations, learning fairs, question-and-answer sessions, ongoing study groups in specific areas of interest, and a variety of lectures. Family Days, at which people of all ages are encouraged to explore the technology together, Business Workshops, and lectures have all been successful. When Zamora noticed that only

about 15% of those who came to the access sites were female, he instituted Workshops for Girls and Women, which drew previously hesitant individuals to the program. Classes, ranging from a Kids Computer Playshop to Programming in BASIC, are offered in addition to open access.

Many CTUSA affiliates are public libraries, and the first permanent ComputerTown site in Menlo Park was at the library. Computers are generally kept in open areas for public use, but are moved into a story room for classes. Many children now frequent the library after school, so librarians have had to impose a 30 minute time limit for each child to use the computer if others are waiting. Most of the program tapes available in the Menlo Park library are games, and few are explicitly educational in nature, which probably contributes to the children's new perception of the library as fun and "not so stodgy after all." Although the computers are bringing more children into the library and having a library card is a prerequisite for using the computer, there has only been a slight increase in the use of library materials. The computer has yet to be fully integrated into the library's goals (Zamora, 1981). An older patron at the library recently commented "The library reminds me of a pool room of years ago because that was the local hangout for kids. Now they hang out at the computers" (Harvie, 1982: 3).

The particular use of computers depends on the site

at which they are located. Computers first came to the Little House Senior Center in December 1981. Located in a park and sponsored by the Peninsula Volunteers (a charitable organization dedicated to the principle that life and learning do not end at age 65), the Center provides a comfortable social atmosphere and offers classes in arts and crafts, languages, psychology, philosophy, and many other subjects. The addition of the computer seemed a natural extension of already-existing activities for the 3000 members, most of whom actively participate in the various programs offered at the Center. The computer room is located in a glassed-in porch overlooking a garden, and three computers are arranged around an L-shaped table, with manuals, magazines, and reference books easily at hand. Participants mostly engage in serious programming; computer games seem to have little appeal for this group. Anyone who takes the seven-week class offered by CTUSA takes turns assisting the teacher of the class for the next group. Experienced programmers offer backup support, and teenagers from Palo Alto's "Computer Tutor" program provide assistance, but the Little House members form the core of the activity (Lehman, 1982).

CT/Menlo Park has also moved computers into a Boys' Club in a lower income neighborhood. About 40 boys frequent the place, although girls are encouraged to use club facilities and participate in the range of

recreational and vocational activities sponsored there. The computers are used mostly for games, and seem to be very popular among users. During one ComputerTown event, a young man was overheard saying "If they had computers when I was in school, I'd probably still be there"

((Zamora, 1981: 8)). Likewise, a computer exhibit at the Palo Alto Junior Museum was supplemented with the opportunity for hands-on activities through the loan of ComputerTown machines. It turned out to be so popular that the Junior Museum has become a permanent site for the project.

CTUSA's efforts focus on those people who have heard of computers and want to know more. Zamora sees the role of his staff as teaching people enough about computers so that they are ready to make a purchase decision, whether negative or positive. Many people buy computers and bring them back into CTUSA classes to learn how to program them. That practice has left CTUSA open to the accusation of using the most utilitarian definition of computer literacy available, the state of owning a computer. Beyond the fuzzily-defined goal of "bringing computer literacy to the entire community," there are no clearly stated aims. No mention is made of imparting an awareness of the social impacts of computers, for example (Taylor, 1982).

Loop stresses that CTUSA doesn't teach computer science, but simply helps people to see the computer as a

tool and learn to work with certain techniques to use it. The number of commands one masters is irrelevant; the evolution of a relationship with a particular kind of tool is what she sees as important. For example, she cites the case of the woman who had no previous experience with computers, and attended one of CTUSA's workshops in which she worked with two different packaged mailing list programs. "Aha!" the woman exclaimed in the middle of the workshop. "I see--this one lets you rearrange your entries after you've alphabetized them and the other one doesn't." That is the kind of success ComputerTown is looking for. One of the major goals of the group is helping people learn not to fear technology, while learning about the versatility of computers and gaining practical knowledge of how to use them.

NSF defines CTUSA's role as a nationwide dissemination project to help new local computer literacy projects by providing a publication called the ComputerTown USA News Bulletin, an "implementation package" containing information on how to start and manage a successful ComputerTown, and a series of outlines for self-teaching courses appropriate for use in ComputerTowns. When the NSF grant ends in September 1983, a national (or perhaps global) association will be formed to continue to link local projects together. The group hopes to raise enough money to enable it to continue through membership fees and voluntary contributions.

In addition, CTUSA is responsible for helping two other sites develop computer literacy projects based on the Menlo Park model. In the future, CTUSA will assist local groups to teach people to use and program computers, to set up workshops, to explore the varied uses of computers, to examine the social impacts of computer technology, and to provide free public access to computers. Membership will be free and open, although activities such as classes may involve separate fees.

In Menlo Park, some new projects being considered include rent-a-computer (to use at home), rent-a-computer-kid (to show you how), tours of programming facilities, videogame contests, demonstrations of computer-driven vehicles, and a mentor program in which computer professionals will work with "advanced" kids.

Zamora has high hopes for his project. Success for him means that projects like CTUSA will not need to exist within five years because the tool (microcomputers) will be so completely enmeshed in the culture. By that time he hopes that programs for computer literacy or public access to computing will not be necessary because everyone will own their own computer.

Office for Open Network

Exploration of ideas in one of the main functions of the Denver-based Office for Open Network. The network

serves as an information and idea exchange for over 600 users from most states and several foreign countries, and is at present the only existing network which has made a deliberate effort to avoid focusing its concerns.

Leif Smith founded the Office for Open Network in 1975, and currently serves as director of research for Network Research Incorporated (NRI), an educational and research organization that develops networking tools for social transformation, of which the Open Network is a project. Not reconciled to being a specialist, Smith decided to make room for people to ask unusual questions, even if the questions did not have widespread implications. "Questions we don't ask around here" had no place in his scheme and neither did the easy stereotypes many people fall into. His aim was to encourage people from many walks of life to participate in the network, thus making it more diverse. Patricia Wagner, director of publications for Network Research, has staffed the Office for Open Network since 1978.

The annual fee of \$40 gives users access to computer and paper files, in-person and telephone contacts with network staff, and the chance to expand their personal networks through what Smith and Wagner call "access to the unexpected" (Lipnack and Stamps, 1982). Individuals who cannot afford the fee may elect to volunteer to help out at the office rather than paying in cash.

Users may ask network staff to help them find some-

thing as mundane as a good plumber, bakery, or baby-sitter, or as unusual as an exorcist or an expert in Lithuanian culture. Linking people together is a major goal of the group; Wagner and Smith cite example after example of near-perfect matches made through the network. The woman traveling to El Salvador stops in at the office at the same time as the woman who happens to have a sister-in-law living there. A couple remodeling a new home connects with an inexpensive plumber. A user finds two rooms of furniture to lease gratis; now the owner will not have to pay storage costs. A lover of ballroom dancing finds a 19th century dress ball, complete with Strauss waltz orchestra. Smith and Wagner see nothing extraordinary about such coincidences; that is simply how the world works, they claim.

Networks of people interested in similar concepts and ideas are formed here as well. The real estate developer and a woman fighting real estate development in the same neighborhood meet over coffee, both survive the encounter, and each begins to arrive at a better understanding of the other's point of view. Although 75% of the network's users live in Colorado, connections aren't strictly local: a handful of people separated by thousands of miles who want to exchange information about nomadic living have been put in touch with each other, for example (Wagner, 1982).

Wagner and Smith point out that a networking office should be a place that generates other people's networks. It should not store information as a library does, because the more information the network stores, the more expensive the overhead and the longer it takes to find things. Instead, the network makes connections with other groups and organizations, one at a time, and lets individuals have the fun of completing their own quests. In the end, the practice becomes more important than the underlying theory. Networkers rarely discuss theories about networking, preferring to find out what the person cares about, finds interesting, and wants to do. Then they try to be useful, Smith explains.

Smith describes the network as "open," since there is no restriction on the kinds of information a user may seek through the network or the kinds of people who can become users. Networkers do not evaluate, judge, or rate the users. The Office for Open Network holds a deliberate policy of nonexclusion; nothing is censored and the network does not officially uphold any counterculture or New Age values. Making connections between people is central to the network's function, and Smith refers to this process of building a grid of relationships across society as "weaving a network."

The "open" is the most important concept guiding the Office for Open Network. Most network systems, they point out, are focused in some way, either by subject

matter or point of view. People who run networks often assume that there is a "correct" way of looking at the world and that their particular way is it. Appropriate technology networks, for example, often fall into this trap; they often automatically disapprove of anything that seems like "high" or sophisticated technology.

The Office for Open Network differs in that networkers do not assume that everyone should share the same view of the world, and consequently, the office has users whose views span the spectrum of political, economic, and social thought, with diverse ideological viewpoints often conflicting with one another. Smith and Wagner do not ask for agreement or consensus; the rich resources and philosophical texture of the network depend on its internal diversity. Anyone can be a user, regardless of political persuasion, religion, economic background, or personal beliefs. The network's staff believes in an open marketplace of ideas and stresses the need for open exchange of ideas and information, with no censorship.

Bringing together people with different viewpoints represents a particular challenge for Smith and Wagner. They advocate interdisciplinary research and exploration, and often try to bring people on opposing sides of an issue together, emphasizing that they want to live on a "planet of diversity," where value is seen in both sides of an issue. Wagner joined the Office for Open Network in part because she was tired of working on projects

based on making enemies, where the existence of the project depended on hating someone or their politics. Making the world a better place is one of Wagner's goals and part of that task involves bringing people together for mutual benefit. (Hartman, 1982; Wagner, 1982).

"If we didn't know better, we would say that great forces are consciously at work in our society to force people to hate each other, to force people apart. You can fight that kind of disintegration by asking questions, particularly the kind no one will ask" (Wagner and Smith, 1980: 29). Smith's original concept of the network was to make it a "wall dissolving apparatus," but he points out that walls are broken down selectively and a little bit at a time. He allows people with different viewpoints the opportunity to get together on friendly, neutral ground and explore their similarities and differences.

Surprisingly, the Office for Open Network is always trying to get people to use the network more often; only about 10% of the users utilize it as much as Smith and Wagner think they could. Since the office must be used as a tool, networkers don't find the information for users, but rather start users on the path to finding it themselves. "Don't just give us \$40 and walk away," Smith cautions. "We don't promise to do anything." Once, to see what would happen, network representatives gave almost identical lists of contacts to two people of similar background who were looking for jobs in a certain field. One came

back with success stories of interviews arranged and many connections made; the other said "Well, you didn't get me a job" (Hartman, 1982).

Smith calls the people who make connections within and between networks "weavers" and considers a fundamental part of his task to be the design of good tools for weavers. Therefore, it's not surprising that the Office for Open Network has adopted one of the most powerful tools to become available to networkers in the last decade: the microcomputer. Small computers can assist networkers in keeping track of new developments, resources, references, titles, and names and addresses. However, the Office for Open Network emphasizes that the computer is peripheral to their primary interest of establishing and maintaining links among individuals. "The good guessing of human beings is more important to our work than computer searches," Smith asserts (Lipnack and Stamps, 1982: 140).

Only 10% of the networking is done via computer, Wagner stresses. Another 5% comes from paper files and the rest is anecdotal, personal, and stored in the heads of the networkers themselves. The computer has difficulty keeping up with all the changes that take place, is costly, takes more time to operate, and can't replace human interaction. People who see computers as a solution to the old problems of communication are simply deluding themselves, Wagner states. She cites many anecdotes about groups who implement computer systems before even

trying to solve the human communication problems first, such as the gay network that can not afford to send their newsletter first class or make telephone calls between nodes; they're now installing an expensive microcomputer network rather than trying to change the newsletter structure or explore other possibilities. There is the firm that installs computers because "no one's talking" to one another," and the group of state-funded centers for women that forgoes establishing interpersonal ties in favor of a computerized network.

Smith designed the Open Network's computer system over a period of about four years, with some assistance from other programmers and systems designers. It is used as a smart filing cabinet, word processor, letter writer, mailing list generator, and information file for the network. Only information placed in the computer by current users or the information the staff enters is included. The Office for Open Network timeshares on a Prime Information 750 minicomputer owned by Gathers Software.

When an Open Network user opens an account, a paragraph about his interests is typed into the computer and updated as often as the client likes. Key words describing the entry are listed, and others interested in those topics can be put in touch with that person. Half the users, however, never enter anything into the computer--evidence that it is used mainly as a backup

for the network (Wagner, 1982).

The control that users have over the information stored in the computer about them is central to the philosophy of the Office for Open Network, since the concept of a free flow of information throughout society serves as a foundation for much of their work. The network illustrates the concept of freeorder: spontaneous rather than artificial order. Spontaneous orders are not necessarily complex, but unlike deliberate human arrangements, they may achieve any range of complexity and in general tend to be quite complex (Hayek, 1973). Smith's definition of freeorder revolves around the idea that if individuals refrain from controlling things they have the power to control, the result is a spontaneous order far richer than anything that could have been contrived by foresight, particularly in situations where several people are interacting. "By freeorder, I mean a balance between designed and spontaneous orders which is conducive to exploration," he explains (James, 1981: 38). He stresses that the Open Network is a process, not an organization or structure.

The open network is a freeorder arising from all aspects of the world in which an explorer of sovereign spirit may rejoice. It is a process and an image. It is not an organization. It cannot be owned and it cannot be controlled. You may connect with the open network through the facilities of Network Resources in Denver. We find, invent, and distribute tools for explorers of all kinds--from scientists to artists to craftsmen to theologians (Smith, 1982).

The Office for Open Network maintains its commitment to the concept of freeorder by refusing to structure the addition of new users in any way. Rather than advertise, they allow the network to grow naturally. While Smith and Wagner express a hope that some day many offices of this type will exist, they make no active effort to extend the range of their activity. Rather, they allow the spontaneous processes of freeorder to slowly structure a complex web of interactions.

While pointing out that the network works best on a local grassroots level, Smith is toying with models for establishing the open network concept on a larger scale. The creation of offices that share the same basic principles but have different organizational styles (one geared to business people, one to students, for example) or a nationwide computer-based open network offer intriguing possibilities. "We're going to Rolf the planet," Smith predicts, referring to the concept that the Open Network can help people break through the barriers that inhibit communication (Smith, 1982).

Community Memory Project

The Community Memory Project, active in the San Francisco Bay Area during the mid-1970s, approached the problem of public access to computing on two levels. The group made computer terminals available to community members free of charge and also provided for a democratic

communications environment in which the users of the system were themselves responsible for the entire content of the database. As a system for public management of public information, Community Memory provided an open channel for community communication and information exchange by presenting an alternative to mass media and legitimating the ability of people to decide for themselves what information they wanted. Although the original experiment had to be dismantled due to lack of funds and problems with equipment, the group hopes to begin another trial in 1983 (Community Memory, 1981a).

Community Memory grew out of Project One, a forty-person experiment in leaderless living located in a former warehouse in San Francisco and supported by the Stern Foundation. Members of Project One founded Resource One, a public interest media group. When Chris Maise and Pam Hardt, computer science students at the University of California at Berkeley, decided that their skills need not necessarily doom them to careers in the corporate world, they joined the collective and began searching for a firm that would donate a computer to Resource One. Hardt worked her way through the Yellow Pages until she connected with Transamerica Corporation, which agreed to lend the group three out-of-date Scientific Data Systems (XDS) Model 940 computers.

The XDS-940 was the first machine designed for time-sharing and relied on the operation of high-speed mag-

netic drum memories. Those on Resource One's computer were worn, obsolete, and without a source of replacement, so the engineers had to devise makeshift patches whenever the drums failed, and adjust to a system that operated with no margin for error. With the help of several programmers and grants from eight separate foundations, the group eventually built a timesharing computer operation (S. Emerson, 1981; Felsenstein, 1975; Findley, 1974).

Resource One's computer was installed in the summer of 1972 and provided services for several public interest groups in addition to the Community Memory database. A research information database compiled from public files allowed Bay Area groups to have access to data on resource sharing, local decision-making, and employment opportunities with "alternative" firms. An urban database provided information collected from computer tapes from the register of voters, census bureau, and county assessor which could be analyzed to show patterns of ownership and indicate the domination of selected areas by small elites. Legal and medical statistics were made available, as were a social service referral directory, accounting services for nonprofit groups, report typesetting, mailing lists, and consulting. Courses in programming and computers-and-society were offered. Much of this information was made available to the public through Community Memory (Community Memory, n.d.).

The first incarnation of Community Memory appeared

between 1973 and 1975 in the San Francisco Bay Area, and involved up to four terminals operating simultaneously. Terminals were placed in a music store, hardware store, community information center, back-to-the-land store, and a branch of the public library. The terminals were used up to 70% of the time available, and there was usually a line of people waiting to use the system. On a good day, about 30 people used each terminal, and over 8000 entries were made during the fifteen month trial period (Community Memory, 1981a; Felsenstein, 1973).

One reason for establishing a Community Memory database was to counter the feeling of many people that computers are used on them rather than for them. With terminals leased to stores and libraries on an ability-to-pay basis, project workers hoped to allow individuals to actually use a computer, a rare event for the ordinary citizen during the early and middle 1970s. "We'd like people to learn to use the technology," stated Steve Robinson, a Community Memory programmer. "It's really just a means of communications and learning and we think people should be able to use it as much as business and government" (Findley, 1974: 2).

Community Memory workers saw the potential for interaction on information utilities as constrained to "audience response" and usually structured to promote consumption (such as teleshopping, for example) (Community Memory, 1981b). Community Memory workers hoped to

combat that orientation, and to facilitate person-to-person communication without the intercession of third parties by placing the computer terminals in public places throughout the Bay Area. The modular design of the system and emphasis on decentralization allowed for local control and management of its operation, minimizing the interposition of technical experts and maximizing the participation of citizens.

Project workers emphasized that the process of the information flow remained more important than the information itself, since that structure was what gave Community Memory its unique character. Rather than following the typical structure of the few existing public access systems (vertically organized, conceived primarily for the delivery of computer-aided instruction and other pre-selected information, and as thoroughly edited as other forms of mass communication), Community Memory explored the possibility of horizontal, person-to-person data acquisition and delivery (Colstad and Lipkin, 1975). Community Memory tried to encourage certain patterns of behavior, particular interactions around the public terminals.

The designers of Community Memory expected the users to take responsibility for the maintenance and usefulness of the database. Since users could comment on any message, editorial comments, suggestions, criticisms, and referrals to other messages might be added. Problems

with spelling, obscure keywords, duplications of entries, unreliable information, or incomplete information are likely to arise in such a system, where in the end, the overall quality of the information in the database depends on the users themselves. Community Memory workers refused to censor any information appearing in the database, and reported few problems with "objectionable" material (Emerson, n.d.).

Despite their enthusiasm for the project, Community Memory workers warned that a Community Memory database might not be the most functional arrangement in all cases. They stressed that other tools would be appropriate in other situations, and warned against the seduction of the technological fix, indicating that technology alone cannot solve societal problems. Even though the powerful often use technology to their advantage, merely spreading technology to other sectors will not change anything, they assert. Only humans can build a humane world (Community Memory, 1981a).

The Community Memory people, who have formed a non-profit corporation, are not peddling a system. Rather they are pushing the idea that people have the right and the ability to decide for themselves what information is useful and to make the necessary connections in order to get the information they need to have more satisfying lives. The Community Memory system is therefore potentially a means of giving people more control over their lives and reducing their exposure to commercially generated and corporately controlled information which only perpetuates the status quo. (Emerson, n.d.: 8).

Thus, although the computer was central to the Community Memory experiment, the operators of the system viewed it as merely a technological aid to communication and not an end in itself.

The nonhierarchical theme of Community Memory pervaded the organization that sponsored it as well. Since the termination of the original experiment in 1975, Community Memory has been an independent spinoff of Resource One, and run as a nonhierarchical, worker-managed collective. The outdated and expensive equipment used in the trial could not support replication or expansion of the project, and volunteers and consultants for the nonprofit collective have been rewriting programs for the project for the past several years in an attempt to make the programming more reliable, economical, and portable to other types of computers.

In order to support the next incarnation of Community Memory, workers have formed a software company as a subsidiary. Pacific Software, which markets the Sequitur database management and word processing system designed by Community Memory programmers for use in automated offices. Their first \$100,000 in clear profit will be donated for the second phase of the public access trial.

Phase Two of Community Memory was scheduled to begin in 1979, but at present it is unlikely that it will appear before the middle of 1983 at the earliest. The basic concept will remain the same, but the project will

include more terminals and clusters of about twelve terminals forming nodes. The central computer will be a Digital Equipment LSI-11, a fairly inexpensive mini-computer, and the dumb terminals will be connected by high speed modems. As nodes arise, they will be linked into a regional (but distributed) network, and each will provide both a local and a network-wide focus. Eventually, the sponsors envision the creation of a national network.

Community Memory workers expect that the next incarnation will involve terminals broadly dispersed in public places such as community centers, stores, libraries, bus stations, free clinics, coffee shops, and laundromats: any place where a high level of drop-in traffic is likely to occur. The availability of terminals to the public combined with the community control of the database content provide the foundation for the computer to serve as an appropriate technology to link different communities together. Stressing that "community" may include linkages other than geographic, Community Memory indicates that the use of this system may strengthen people's involvements in many overlapping communities and help them work towards common goals.

The designers of Community Memory would like to see a world not broken up into nation-states or corporate states, but one built upon many overlapping regions of concern: from household to neighborhood to interest group or work group, from geographical region to globe, where decisions are made by all those affected. This would be a world where power is distributed and governance is the process of collectively trying to determine the best action to be taken, via general

discussion and complete dissemination of information. With this vision, Community Memory has been designed to be a communications tool for a working democracy (Community Memory, 1981a: 2).

A Model for Vernacular Computing

Despite the apparent differences among these four networks, they all share certain common characteristics. Each explicitly expresses some ideological viewpoint, which includes a sympathetic attitude to the tenets of alternative technology. Public access to computing is encouraged, public education is actively pursued, and each project is local in scale. These groups represent types of social inventions, those alterations in social organization that create new procedures for shaping human interaction and activity. In addition, these projects represent the small-scale use of technology relying on developing human skill and retaining the human as the active director of the technology (Mumford, 1964; Whyte, 1982).

These groups all point to the potential of using computers in a decentralized and cooperative fashion. The inherent flexibility of the computer allows for innovative forms of communication based on the multifunctionality of information technology that stresses interactive, participatory, and horizontal modes of communication.

The concept of vernacular computing is clearly an ideal type and is useful as an easily understood framework that describes certain forms of organizing the technology. By setting the vernacular model against the characteristics of mass-oriented computing, a clearer understanding of each individual system may be attained (see Table 1).

Table 1

Mass versus Vernacular Computing

<u>Characteristic</u>	<u>Mass Systems</u>	<u>Vernacular Systems</u>
Fundamental Ideology	Commercial	Service
Number of Services	Many	Few
Target Audience	Consumers	Participants
Fee Charged	Significant	Minimal
Organizational Style	Hierarchical	Egalitarian
Private Communication	Yes	No
Public Communication	Yes	Yes
Amount of User Control	Small	Large
Censorship Practiced	Yes	No
Social Context of Use	Private	Public

On the basis of this model, the six systems may be placed along a continuum running from mass to vernacular. CompuServe Information Service and the Source occupy roughly the same position within the mass

model. CommuniTree's mixed ideology of commercial and service orientations places that system in a position spanning the two models. ComputerTown USA's somewhat hierarchical structure (imposed in part by the requirements of the National Science Foundation for a clear identification of project directors and the like) as well as the relatively large degree of control over the available programs exerted by project staff also makes that a transitional effort. The fee charged by the Office for Open Network prevents it from completely attaining each characteristic of the vernacular model, although it comes very close. Community Memory serves as the closest example of vernacular computing of the six systems.

Regardless of the organization of a system in the mass or vernacular model, however, the nature of computer technology itself limits the forms of communication that can take place. The influences of mass and vernacular models of organizing the technology modify certain of the potential characteristics of communication offered by the computer as a medium.

CHAPTER FIVE

HOW COMPUTERS SHAPE COMMUNICATION PROCESSES

Communication via computer alters the social relations among participants by providing new contexts for social interaction. In the same way that previous technical innovations (such as writing, the printing press, or television) created new kinds of interpersonal relationships by mediating communication between and among individuals, computer technology offers an entirely new medium for communication. Computers not only provide a new means of transmitting information, they also structure, store, and process communication among groups of people, while removing barriers of time and distance, and allowing individuals to participate at times and rates of their own choosing.

Characteristics of Computerized Communication

The computer imposes restrictions on the format and overall style of messages. Computer-based messages tend to be brief, anonymous, asynchronous, ephemeral, instrumental, and they rely on paralinguistic and individual idiosyncracies in style to supplement the written text and clarify meanings. These limitations cross the

boundaries of the specific social organization of the technology, since they are a function of the inherent nature of the computer. The capabilities of computer hardware (keyboard arrangement and memory capacity, for example) combine with general parameters set by software and programming to structure communication.

Anonymity

The computer links people from diverse geographic areas and this electronic link provides anonymity for the people who use the system to communicate. Face-to-face cues no longer apply, and the likelihood of meeting other participants is low. Since individuals are not physically present during computerized communication, they are identified either by name or identification number. These numbers, which serve as password keys that allow individuals to link their computers to the system, often consist of combinations of letters and numbers, as in "HFT303." Regular users are familiar with the type and range of ID numbers present on a system, and may recognize certain numbers as belonging to individuals with whom they interact frequently.

Generally, ID numbers are supplemented by the use of a nickname or proper name, but some individuals are referred to only by their ID number, especially when the person in question is unpopular among users. The use of fictional names is widespread, since these aliases not only allow individuals to emphasize some aspect of

their personality, but provide an anonymity that balances the public nature of many computer-based messages.

The computer can readily accept changes in either code-names or identification numbers, so that users who, for whatever reason, feel the need to "clear their slates" can simply apply to the system operator for a new number and start fresh with a new electronic identity. This technique is most often utilized in situations where users have become embarrassed about their contributions to online conversation or have been the target of hostile comments by others.

Asynchronous Interactions

The technology of computing does not allow two people to "speak" at once to one another. Some programs allow for online real-time communication resembling a telephone conversation, where users type in their comments in turn, signalling the end of each statement by entering several blank lines into the computer. The vast majority of computerized messages, however, are not exchanged with the relatively short time-delay of real-time processing, but are stored in memory until someone accesses that particular section of the database. Thus, each message must stand on its own to some degree: even in messages that function as parts of ongoing interactions, users must clarify their thoughts within the message itself in order to avoid misrepresenting themselves.

Ephemeral Nature of Messages

Most messages are automatically deleted after being on the system for some specified period of time, because they take up a good deal of memory space, thus slowing the system and making it more expensive to operate. Even while they are current, messages may be moved to less prominent positions in the database by the insertion of later ones, in much the same way that notices on a traditional bulletin board are covered by later additions. Further, the author may elect to delete a message after its usefulness diminishes, leaving no permanent record in the computer's memory.

Brevity

Messages sent via computer tend to be relatively short. Most messages fall well below 500 words in length, with 50 to 100 words being the norm on the systems examined here. Much of this is due to the social organization of the technology: the Source, for example, allows bulletin board messages to be only thirty lines long. Those users wishing to enter lengthier messages must continue in a separate posting, which many users entitle "Continuation of Message Below." This mosaic pattern of message posting can become confusing, since other messages may intervene between two parts of one thought, and the reader encounters the continuation before the initial message when scanning the bulletin board.

Similarly, the limited bandwidth on CompuServe's

simulation of CB radio necessitates the use of communicative codes in order to conserve valuable transmission resources. Since message length is limited to one line, people abbreviate words and enter extremely brief messages in highly stylized form. Names are shortened for ease of address; even shorter names such as "Treehorn" are abbreviated as "Tree." Words are included in this process: "you" becomes "U," "you're" changes into "UR," "with" turns into "W/," and "don't know" becomes "DUNNO." Apostrophes are often eliminated, perhaps due to the extra work it takes to include them while typing.

Instrumentality

Computerized communication is as effective as and sometimes better than face-to-face interaction for exchanging information (especially technical information or very short information exchanges), asking questions, exchanging opinions, ordering products, problem solving, staying in touch, and generating ideas. It is not as effective as interpersonal communication for bargaining, resolving disagreements, getting to know people, or for tasks requiring constant focused discussions. In short, computerized conferencing seems to work best for short instrumental tasks where the relationship among the participants is unimportant (Hammond and Williams, 1977; Hiltz and Turoff, 1978; Rice, 1980).

For the most part, messages sent on the six systems

studied here are instrumental in character. The vast majority are bulletin board messages involving items for sale or trade, real estate for rent, and exchange of services or information. Of the 86 categories available on the Source's POST bulletin board database, for example, only three are utilized for non-instrumental communication. CompuServe's bulletin board is programmed for even more instrumental communication but a balance is provided through the CB simulation and Special Interest Groups (SIGs). Communication via the Office for Open Network's computer is completely instrumental, and the messages on the other vernacular systems tend to be largely instrumental. (Since ComputerTown USA does not provide a bulletin board section, there are no online messages on that system.)

Pseudo-individualization

The computer has the capability to send duplicate messages to an audience unlimited in size, but also can "personalize" each message by inserting an individual's name, ID number, address, or other information at appropriate points in the text. Many firms have applied this function of computer communication to provide personalized direct mail marketing via computer or even write children's books that incorporate the name and address of a particular child. Particularly on the mass systems, such pseudo-individualization occurs through the incorporation of programs that allow authors to simulate personalized

communication by electronically transforming standardized text into a "personal" message.

Written text

Computer messages are typed in through a keyboard, and reflect that technological framework through the choice of most users to adopt a traditional letter or memo style when composing messages. Information appears on the user's terminal screen in "pages" that represent about one screenful of text. Still, the arrangement of information in the computer's memory resembles a scroll more than a printed page, since it is stored in files that include entire messages rather than sections artificially segmented into standard lengths. By implementing the appropriate command, users can read through an entire file without stopping after each page.

The computer delivers messages in a standard format with a subject heading appearing at the top, but users are free to do what they like within the message itself. Although most people adhere to the traditional format, some utilize the screen as an artist's canvas, putting spaces between letters or words, running words together, or skipping lines. Typewriter graphics are also a popular way to express one's creativity, as shown in this Valentine's Day card addressed to the regular users of one of the Source's bulletin board categories.

HAPPY VALEN
 TINESDA YTOFIAN
 NATHEDRAG ONMAVENT
 ROLLFREDTHEFISHPRI
 *NCESS*IVY*DEIDRE*
 CLEINDORIGNOME
 /AVATARCIMBRI/
 /C&COURSHED/
 /GARALLEN/
 //POEST/
 /ANDY/
 /OU/
 /

. . . . HALFLING

Paralinguistic Features

Despite the relative anonymity of users who interact via the computer, a great deal about one's personality can be conveyed through the use of language. Just as in face-to-face conversation, the actual words chosen provide only a portion of the cues needed to decode the subtle meanings of communication. The way the message is presented also provides a good deal of information about the author; Halfling is clearly no unimaginative conformist. Paralinguistic cues (such as voice qualities and tone) communicate expressive feelings, indicate the age, health, and sex of a speaker, modify the meanings of words, and help regulate interactions among individuals in face-to-face conversations. Such information is essential to maintain effective communication by demonstrating mutual attention and responsiveness, providing feedback, and providing an overall cohesion to the encounter. Persons interacting

through the computer must do the same in order to provide others with an impression that social contact has been made with the person at the other end of the communicative link (Cary, n.d.; Hiltz and Turoff, 1978; Short, Williams, and Christie, 1976).

Sometimes the tone of a message is indicated by a parenthetical comment at the beginning or end such as (I'M NOT SURE ABOUT THIS BUT...) or (JUST KIDDING). More often, however, the author slips comments into the text of the message. Asides such as (HEHEHE), (GRIN), and (UH) help clarify the author's frame of mind for the reader.

Spelling is often used to convey greater depth of meaning since nonstandard spelling of words can call attention to their sound. Users may write in a regional dialect (SEE Y'ALL LATER) in order to indicate informality or to express some personality trait. Spelling can also indicate the degree of the writer's emotional involvement in an issue: lengthening words can indicate stronger feelings. For example, a CIS CB user displayed his displeasure with a joke made by another user by typing BOOOOOOO!!

Contrasting features of punctuation and capitalization mark changes in pace, tone, topic, or important points in a message. When another CBer grew impatient with a friend who had promised to leave the CB program and join him in a private online conversation, he emphasized his frustration by using excessive punctuation: !!!!BLIP!!!!. Similarly,

the Community Memory user who wanted to point out his changed feelings towards computers delimited a word in slashes (/) in order to give it additional stress in the sentence.

WHAT THIS COMMUNITY MEMORY MAKES ME WANT TO DO IS LEARN MORE ABOUT COMPUTERS. I HAVEN'T EVER BEEN EXPOSED TO ONE IN THIS MANNER, I.E. BEING ABLE TO USE IT MYSELF. USING IT MAKES ME REALIZE THAT THERE ARE AMUSING AND INTERESTING THINGS THAT CAN BE DONE WITH COMPUTERS. BEFORE THIS I NEVER HAD ANY INTEREST IN LEARNING ABOUT THEM--SOMEHOW I ONLY THOUGHT OF THEIR POSSIBLE USES AS /SCIENTIFIC/, RATHER STERILE. BUT HAVING SEEN THIS EXAMPLE OF A POSSIBLE USE, I AM NOW CURIOUS ABOUT HOW THEY OPERATE AND FIND MYSELF WANTING TO BE ABLE TO PROGRAM THEM. NOW I MIGHT CONSIDER TAKING A CLASS OR SOMEHOW LEARNING ABOUT COMPUTER PROGRAMMING.

In the same way, this existential reflection entered by a Source subscriber emphasizes the word "just" to make a stronger statement.

I HAVE NOTICED THAT I AM NO LONGER - JUST -
TYPING ON A COMPUTER'S KEYBOARD, BUT PLAYING
THE KEYBOARD OF A GIGANTIC PIPE ORGAN, LAUNCHING
MYSELF THROUGH THOUSANDS OF MILES OF WIRE AND
CHIPS,

This poem, appearing on Community Memory, utilizes many paralinguistic features that give it its unique character.

FIND 1984 YOU SAY/ HEH, HEH, HEH JUST
STICK AROUND ANOTHER TEN YEARS/ LISTEN TO ALVIN
LEE/ PART YOUR HAIR DIFFERENT/ DROP ASPIRIN/
MAKE A JOINT EFFORT/ DRIFT AWAY/ KEEP A CLEAN
NOSE/ HUM "OM ON THE RANGE"/ QUIT KICKING YORE
HEART SEE ME, FEEL ME/ U.S. OUT OF WASHINGTON/
FREE THE INDIANAPOLIS 500/ GET UP AND GET AWAY/
FALL BY THE WAYSIDE/ FLIP OUT/ STRAIGHTEN UP/

LET A SMILE BE YOUR UMBRELLA/
AND B.E F O R E YOU KNOW IT*****

1984
 WILL
 FIND
 YOU!

Each user of computerized communication develops some paralinguistic cues that mark the message with a personal stamp.

Mass and Vernacular Influences

While many aspects of computerized communication are determined by the inherent nature of computer technology, there is a degree of flexibility that allows for variation according to the social organization of the technology. While the mass and vernacular systems resemble one another in many ways, the particular communication services offered by each reflect their differing orientations. Private interactions, such as electronic mail and online conversations, for example, are more characteristic of the mass systems, and while public bulletin board areas are found on both types of systems, the messages differ in content across the two.

Private Interactions

Using the computer as a personal "mailbox" or "telephone booth" can be appealing due to the capability of the computer to manipulate text and send it at high speeds across long distances. Password codes protect the privacy

of an individual's messages, and private interactions remain popular with users. A survey of just over 2000 CIS subscribers indicated that 54% chose interpersonal communication as their favorite service on the system. Two types of private person-to-person communication are common at present: electronic mail and online conversations.

Electronic Mail

Electronic mail has proved to be more popular than originally anticipated by system operators of the mass networks. Since mail is one of the first capabilities that new users encounter, the mail program tends to be designed for ease of use. CompuServe's program relies on a series of menu-style indices; the user need only depart from responding to questions programmed into the computer to compose the message itself. Although CIS has had problems with accuracy and efficiency of the mail program in the past, management recently revised the program and now promises accurate mail delivery within 20 minutes.

Similarly, Source subscribers can send electronic mail to one or many recipients, forward mail for others to read, or reply to messages received. Almost all Source subscribers (95%) use mail at least one time during a computer session, and it consistently ties with the UPI news service as the most frequently accessed portion of the database. Occasionally, the mail function

is used to check on the integrity of system operators. When revised user manuals had been promised to subscribers for several weeks and never delivered, user complaints grew frequent. One user, after protesting the lateness of the manual to Source management, received an electronic letter from the customer relations department assuring him that the manuals were in fact in the mail. Rather than simply accepting that information, however, he forwarded the letter to several friends, and asked if they too had received notes in a mass mailing, or whether it was a personal note. (They hadn't. It was.)

Electronic mail seems to be largely a characteristic of the mass networks. Of the remaining systems, only CommuniTree provides anything resembling a private electronic mail service. While no personal "electronic mailboxes" are available, users of Gengle's San Francisco Tree can utilize database space as a personal mail delivery point. Other users can then address messages to that "location" in the database... Users reserve space by entering messages that say something like THIS IS A HOLDING PLACE FOR JOHN'S MESSAGES FOR A WHILE or A PERMANENT RESTING PLACE FOR ANY NUGGETS OF ANYTHING YOU HAPPEN TO WANT TO GIVE ME.

While such reservations of database space can function as semi-private mailboxes, they are at best only partially shielded from public inspection. Nothing other than personal ethics prevents other users from reading mail intended for

someone else, and an inadvertent misspelling of a command might lead an innocent user into sections of the database not meant for everyone.

Online Conversations

The possibility of using the computer as a means for users who are online simultaneously to "converse" with one another in real time provides a computerized parallel to telephone conversations. Again, this capability only appears in a specialized form on the mass systems. The vernacular systems allow for two users to read one another's comments on a bulletin board soon after they are posted, but two individuals cannot be linked together in a private and direct conversation.

The Source's CHAT program and CompuServe's TALK program both allow two users who are simultaneously connected to a central computer to be linked in a protected personal conversation. CHAT regularly ranks in the top ten databases among users, and TALK remains popular.

If a subscriber accepts another's invitation to CHAT or TALK, they are then linked in a private conversation through the computer. The participants take turns typing in comments, and usually spend little time on preliminaries such as occupation or geographic location, seeming instead to prefer to discuss ideas and issues. Although users agree that such programs facilitate interesting encounters, many limit their use of them because it is relatively expensive. Not only does a user need to wait for responses to

be typed in, but for the computer to transmit these through the telephone lines that connect subscribers to the service.

In addition, online conversations tend to be very frustrating to the participants, since the response is not instantaneous. The waiting period before the return message appears on a subscriber's screen is only a matter of a few seconds, but it is a long enough period in which to become impatient while being short enough that one's attention cannot be switched to some other activity. Thus, online conversations do not serve as a principal means of connecting individuals on the mass systems but rather as peripheral communications services.

Public Communication

The private services on the mass networks are joined by more public types of communication, and the vernacular groups typically provide only public communication. This type of communication usually involves a bulletin board style of arrangement, where users can enter and read messages posted under a number of topic categories.

The bulletin board section on CompuServe, for example, provides a place where users can post classified advertisements. Users can scan the board with a keyword search, but messages are organized by the general categories of items for sale, items wanted, and notices. The subscriber can't simply browse through the bulletin board without having a keyword in mind. Upon entering a keyword, such

as "camera," the user can see how many relevant messages exist in the database. The computer scans the bulletin board and responds with a summary of the number and types of messages available, as in this typical response:

117 SALE MESSAGES
53 WANTED MESSAGES
103 NOTICE MESSAGES

Users who wish to continue, can choose either to read all the messages in a given category or scan them by a brief summary of the content. In addition, messages are assigned reference numbers, so users wishing to refer back to a particular message later can access it directly without having to go through the keyword search process again.

The Source, alternatively, simply divides the bulletin board section into several categories, ranging from "Apple computers" to "Yachting." Users enter messages into the applicable category (or categories), and may read messages by browsing through the category, reading only the title heading of a message or the entire message. Messages are entered in reverse chronological order, so that the most recent message would be the first one seen.

In each case, subscribers can read and send messages with equal ease. No special passwords or equipment are necessary. That is not the case for CommuniTree, however, where users must apply for a personal password if they want to enter messages into the computer. While anyone can call into Gengle's San Francisco Tree and read the

messages without charge, Cengle uses the password system to keep track of the number of users of the system. There is no charge for a password, and passwords are available to anyone who requests one.

CommuniTree messages are arranged in a conferencing format, with messages grouped according to topic, so that comments about a particular message follow it when one reads through the database.

ComputerTown USA offers no database services, so interaction between users takes place outside the context of the computer. Users can try programming the computers themselves, or use prepackaged programs, mostly the games and educational software that has been made available. Occasionally, private donors contribute other software for temporary or permanent use.

The Office for Open Network places very little emphasis on the computer, using it as a backup to the networking that takes place as a result of networkers' memories and paper files. When network users open accounts, they type in a paragraph about their interests and add a list of applicable keywords. The computer is programmed to be very easy to use, so beginners have little trouble navigating the database.

All the messages available to the public in the Open Network's computer are instrumental in some way. Whether someone is advertising a Children's Bookstore, offering classes in German, or his services as a vocalist, messages

tend to be short and to-the-point, as indicated by these typical examples.

ORIGINATOR: (NAME) - (ADDRESS)
KEYWORDS: NETWORK SCIENCE (CITY) NETWORKING

I AM INTERESTED IN INFORMATION SCIENCE AND BARTER NETWORKS.

and

ORIGINATOR: (NAME) - (ADDRESS)
KEYWORDS: ANIMAL SINGER RESOURCE INFORMATION PARTY
MOBILE

FILE OF UNUSUAL SERVICES

I AM LOOKING FOR UNIQUE SERVICES IN THE (CITY) AREA AND CAN PUT YOU IN TOUCH WITH SUCH SERVICES.
EXAMPLES: RENT A CAMEL, RENT A DOUBLE DECKER BUS, RENT A CROWD, RENT LADY GODIVA. LET ME KNOW WHAT YOU WANT OR WHAT YOU CAN DO.

Users who are interested in these topics simply contact the individual listed.

The Community Memory Project provided the first known example of a public access computer network and offers many examples of public bulletin board messages. People seemed delighted to have the opportunity to use the Community Memory computer: in only three months of operation users expanded the database to 700 items, with more than that number having been deleted. The system was used with more imagination and invention than the project staff had expected. Along with the expected classified ads and meeting notices, there appeared learning exchange projects, recipes, public record information, reading lists, type-

writer graphics, and even poetry and love letters. The expected fear of machines was not present; in fact, most people commented that it was time something like Community Memory arrived (Community Memory, n.d.; Emerson, n.d.).

There were no restrictions on the kinds of information that could be entered into the computer, how it was indexed, or who could retrieve the information. Since all the data in the system were put there directly by users, they not only controlled the information but also had responsibility for the ultimate value of the information exchange (S. Emerson, 1981).

Most of the messages were perfectly straightforward: people looking for tennis partners, guitar players looking for bands, lists of classes being offered, informative messages detailing the services offered by the emergency wing of a local hospital. Other messages reflected a more political viewpoint, offering places in social change collectives, or inviting people to join striking farm workers. One group of messages, found under the keyword OUTLAW, provided all sorts of useful information about how individuals could benefit themselves at the cost of the organizations that are often perceived as stealing from the public, such as credit card and telephone companies.

People using the system seemed to be helpful to one another. For example, the question WHERE CAN I GET DECENT BAGELS IN THE BAY AREA (BERKELEY)? gathered the following sequence of responses: (1) THERE IS A STORE CALLED "BAGELS"

ABOVE KEY ROUTE ST. IN ALBANY; (2) THE DANISH BAKERY AT UNIVERSITY AND SHATTUCK IN BERKELEY; (3) IF YOU CALL MICHAEL AT (NUMBER) AN EX-BAGEL BAKER CAN TEACH YOU HOW TO MAKE GOOD BAGELS; (4) YOU CAN GET FRESH BAGELS AT THE HOUSE OF BAGELS, WAY OUT ON GEARY IN SF. The third response points to an important difference between the mass and vernacular systems: vernacular projects provide a sense of geographic community as well as an online forum for interaction.

Otherwise, differences between mass and vernacular systems in the public areas of the databases are slight. The format in each case is similar, and the vernacular systems' users tend to display a greater number of political comments.

While computer technology imposes certain boundaries on the range and style of communication that takes place through the computer, the social organization of the technology does create some differences. Private communications are found only on the mass systems, and the public messages do reflect a different orientation to some extent.

The important difference concerns the structure of interactions that are more ongoing and involving for the individual than are these simple one-time communications concerning easily obtained information. After all, requests for bagels or information about computer equipment for sale can provide a basis for interaction, but further communi-

cation is necessary to build any sort of community by using the computer.

Any community formed through this technology would take on certain unique dimensions due to the strong influence of the computer-as-a-technology. The social context of computerized communication influences the structure of relationships by providing different social settings for interaction. Computers emphasize tertiary relationships (among people who never meet directly) over primary (close and intimate) and secondary ones (characterized by segmentation of individual roles). Further, computer-based communities are subject to intense scrutiny; no previous medium has ever been capable of monitoring its own use in such detail (Calhoun, 1981; Korzenny, 1978; Paisley, 1983).

Different types of communities are formed via the mass and vernacular networks, and those that grow from the mass systems tend to be more clearly defined and articulated. While the nature of these groups is strongly influenced by the technology of the computer, the social arrangement of computing appears to be more central to their development.

CHAPTER SIX

FICTIONAL AND NONFICTIONAL COMMUNITIES

Individuals who regularly use the computer to communicate may find a sense of solidarity with other users. Part of this is no doubt due to feelings of cohesion based on shared participation in a hobby (computer networking) that is at present fairly rare, but a large portion of the basis for these feelings stems from joint activities that individuals engage in while using the computer service. Special-interest groups, electronic magazines, and conferences on topics of interest to discussants provide opportunities for subscribers to the mass networks to become part of an ongoing community.

In addition, some groups have evolved into a sort of ongoing electronic theatre, where users adopt pseudonyms and "act out" roles and scenarios in a manner reminiscent of the popular fantasy role-playing game "Dungeons and Dragons." These fictional communities are populated by characters such as Fred the Fish, Troll, Varrel, Merlin, and Princess Ivy, who regularly interact with one another in fictional adventures ranging from setting up businesses to warring with competing groups to holding electronic parties. Both the Source's bulletin

board categories and CompuServe's CB simulation serve as arenas for such interactions.

Electronic Communities-of-Interest

Mass networks provide a forum especially suited to the discussion of topics of mutual interest among a group of geographically-dispersed individuals. Through using the computer to communicate their thoughts across great distances, participants can become active members of communities-of-interest regarding a wide variety of topics.

The Source was originally designed as a one-way medium; subscribers were to access information from databases with very little interaction with one another. Users protested the lack of ability to provide their own information, and in 1980, management established a section of the database where users could write and edit their own electronic magazines. These periodicals are available to anyone who subscribes to the Source, and some of the more popular ones have been included in a special category that pays royalties to the author to help defray the costs of file maintenance. The magazines run the gamut from The Sonshine Gazette, a Christian publication that features articles on home safety and reviews of books "suitable for the family bookshelf" to Sorsex, a new publication that features titles filled with sexual innuendo and articles that celebrate the new

kinds of interaction afforded by the computer.

Prometheus, edited by Walter Marcinko Jr., was one of the Source's first user publications. He began publishing the magazine in mid-1980, before user publishing was established as a regular database feature. Self-publishers were completely on their own; they bore the cost of uploading files to the STC computer, maintaining them, posting advertising for the publication, and responding to mail from readers. Since the files were unprotected by passwords and available to anyone, there was no way to charge users a fee to access them--not that there was any evidence that others would pay for the privilege, anyway.

Marcinko got involved with user publishing "because it was fun," but had to stop after several months, because costs had simply gotten out of hand. In his final issue, he proposed that the Source pay royalties to user-publishers, just as it does to other information providers, and management soon acted on the idea. By the end of 1981, Marcinko's magazine, filled with social commentary and amusing essays, was back online collecting royalties.

WINK, another electronic magazine on the Source, includes light humor and commentary on the social scene as well as tips on how to use the Source; Be Your Own Lawyer tells users how to copyright their software and discusses the American legal scene; and Trashpoop gives one the poop on the TRS-80 ("trash-80") microcomputer.

Sourcetrekk Magazine, published by Sourcevoid Dave (David Hughes), famous for his efforts to get user publishing started, offers commentary on computers and includes a lengthy article on how readers can start their own magazines. The Closet Opens consists of a group of writers and poets who have come out of the closet to publish their work for the first time.

These electronic magazines are interactive in a way that is impossible for print media. Users can react to articles as they read them and send electronic mail to the author. Generally, the letter and author's response (if any) are added to the magazine right away, so new readers may follow controversies as they develop.

CompuServe subscribers often incorporate the magazine format into the variety of groups and clubs existing on the service. Forty-two percent of the 2000 respondents to the CIS survey expressed an interest in clubs, and 18% said they would like to see more clubs formed. There seems to be a special demand to create clubs that revolve around the hardware and software of home computers, with 67% expressing interest (CompuServe Information Service, 1982).

Rather than creating a club with a local focus (as do most in-person computer clubs), CIS Special Interest Groups (SIGs) offer members the chance to join a group that is national or international in scope. Information conveyed runs the gamut from the very technical to the

very chatty, and the groups serve a social as well as an informational function. "SIGs offer the social interaction of the telephone, the technical information of a specialized journal, and the open forum of the editorial page," explains Bill Loudon, product manager for personal computing services at CIS (Gerber, 1982: 13).

SIGs have been formed to cover various interests of CIS users. The Golf SIG, Space SIG, AVSIG (aviation), and LawSIG all discuss the expected topics. RCA is a group established by RCA primarily for use by its field representatives and store managers, and the FireNET SIG welcomes people working in the fire protection industry. There are several SIGs for owners of specific types of microcomputers and for people who use similar kinds of software such as computer-generated music. Home activities can be discussed via Cooks' SIG, whose operators are on the staff of Better Homes and Gardens. HAMNET brings amateur radio operators together, and the sports SIG provides a forum for people interested in amateur and professional sports to discuss their interests. CBIG (CB Interest Group) offers a place for aficionados of CIS's CB simulation to post messages, continue CB conversations in greater detail, and post announcements of online "parties," where several people arrange to meet on CB at a certain time.

Netwits, a general-interest SIG where subscribers can read user-authored essays and participate in computer

conferences, is one of the oldest databases on the system. Richard Schorr, a subscriber, suggested in 1979 that users might enjoy such an offering, and his intuition turned out to be correct. Communications services appear to "humanize" the technology and therefore attract many users (Meier, 1982a).

A coalition of several user-authors, Netwits publishes a number of magazines and articles. Kermit's Korner discusses life in general and offers the reader tidbits of the author's philosophy on topics like the nature of humanity, time, and money. Snakepit provides offbeat essays, The Freelance Scholar considers infant learning in depth, and Movie of the Week presents a serialized story. Curmudgeon-in-Training, dedicated to Andy Rooney, offers humorous and satirical essays. The articles address issues concerning the popularization of computing, such as the evolution of word processing and the formation of an information elite.

A user-controlled forum for discussion, Netwits concentrates on providing articles primarily for the entertainment of readers. The editors do, however, consider the broader implications of what they publish. As one editorial explaining the evolution of Netwits stated, THE BEST ARTICLE WE HAD WAS ABOUT RIGGING PHONE DEVICES FOR MAKING FREE LONG-DISTANCE CALLS, BUT WE DIDN'T PRINT IT FOR FEAR OF PRISON COOKING. Some degree of control over information is still maintained by the editors.

CommuniTree, as a bridge between the mass and vernacular models, provides elements of both: along with the opportunity for the formation of online communities comes the ideological standpoint that users have the ultimate control over the information on the system. User involvement is stressed throughout: a copy of the nuclear freeze petition is included online and users are encouraged not only to find a printed copy and sign it but to call local nuclear freeze headquarters and get involved in the campaign.

Specialized conferences link together users with similar interests. The Info/Liberty conference on the San Francisco Tree, for example, encourages the widest possible public participation in decision-making concerning telecommunications development, use, and policy; open access to government information; and maintenance of Constitutional rights. It is comprised of straightforward medium-to-lengthy expositions on the topic that are contributed by several individuals.

Gengle encourages all users to actively participate in the interactions that take place through his Tree.

FINALLY, IF YOU HAVE BEEN MOSTLY A 'READER' OF CONFERENCE MATERIAL AND NOT TOO MUCH OF A 'WRITER,' TRY TO BREAK THAT TREND BY AT LEAST ADDING YOUR OWN COMMENTS TO THE BRANCHES YOU ARE FOLLOWING, WHETHER THE AMATEUR RADIO, ROBOTICS, OR OTHER BRANCHES. THE FAIRWITNESSES HAVE LITTLE ENOUGH FEEDBACK AS IT IS, AND THE KNOWLEDGE THAT THEIR WORK IS BEING USED WILL KEEP THIS LARGELY VOLUNTEER SYSTEM 'ON THE AIR' FOR AWHILE LONGER.

A unique aspect of the CommuniTree system is the presence of fairwitnesses. Although the fairwitness role has been employed on EIES and other networks oriented to professional, CommuniTree offers the only such system for the public. Most conferences need a fairwitness, an individual to keep them alive during the early stages before a fully functional conference network is in place, especially since the beginning stages are often marked by the presence of relatively few users.

In the early stages, the fairwitness might promote the conference through multiple communications channels, phoning and talking to people who might be interested in participating. Fairwitnesses may cajole an expert to join the conference for a time, and fairwitnesses typically add proportionally more messages than the other participants in order to get the conference up to a "critical mass" of user interest. At that point, the quality of the information itself takes over, and attracts users based on word-of-mouth advertising.

During the middle stages of a conference, the fairwitness may introduce new users to the conference and help them become more familiar both with the specific conference and the database in general. Above all, fairwitnesses organize the mass of data in the conference into something manageable by periodically sifting the heap, consolodating the gems, snipping away the garbage, and pruning the Tree of irrelevancies (Gengle, 1981a; Gengle,

1982a).

Obviously, the fairwitness exerts a certain degree of control over the conference. The various roles--moderator, editor, peacekeeper, promoter, guide, host, database organizer, chairperson--offer a good bit of power. The discretion of the fairwitness is relied upon in many instances; the good fairwitness will not simply consider the message itself but also how the author feels about what has been said.

In the same way, the system operator, who often works closely with the fairwitness, occupies a position potentially open to abuse. Gengle has designed some structural barriers into the system to guard against this; it is very difficult for the system operator to observe the entry of data into the system as it happens or to pry into private files that people may have set up, for example. However, he notes that a good FORTH programmer would probably have little trouble getting around these restrictions.

The groups on CommuniTree as well as those on CIS and the Source, are concerned with discussions of actual phenomena. Topics are nonfictional. The nonfictional communities formed through special interest groups, conferences, and electronic magazines allow individuals who share some interest to "meet" and freely discuss the topic. Often these groups are goal-directed, such as groups which seek to improve the computer programming,

cooking, or gold skills of participants. Others, however, are purely sociable in nature; subscribers simply use the groups to focus discussion on topics of interest.

A new type of community is also emerging via the mass networks: communities in which participants take on the name and persona of a fictional character and engage in a sort of improvisational theatre through the computer.

Fantasy in Fictional Fellowships

The fictional communities that arise on the mass systems appear to bear little resemblance to the mundane world in which most of us live. Participants appear to be playing some sort of game as they conduct their characters through a variety of adventures.

Games serve as extensions of social man, clarifying cultural forms that have become so familiar that their meaning is forgotten or obscured as we conduct the routine activities of everyday life. Play is a free-standing activity that differentiates itself from everyday life by virtue of its being "not serious," (i.e., not instrumental) but at the same time absorbing the player utterly and intensely. No material interest or profit accompanies play, which proceeds within its own boundaries of time and space according to rules fixed in advance. Play is a fragile activity; at any time reality may rudely reassert its rights either from outside the game context (through some interruption) or from within (by

means of an offense against the rules or a collapse of the play-spirit). Games serve as focused gatherings for the participants, since they are characterized by a single focus of attention and a heightened mutual relevance of acts (Caillouis, 1979; Goffman, 1961; Hui-zinga, 1950).

The interactions in the fictional communities certainly qualify as play, but they go beyond that framework to form communities. On the Source, two categories of the POST bulletin board section, CAD0 and CHATTER, are characterized by a great deal of such interaction. With only a few exceptions, characters engage in ongoing interactions with one another that are entirely fictional. This comment concerning a birthday present that "Glinarien the Fair" had given to "Thundarr" illustrates the form of interaction.

SUBJECT: WARNING!!

THUNDARR-

DO NOT, UNDER ANY CIRCUMSTANCES, PUT THE MAGIC POWDER IN ANY LIQUID!! IF YOU DO, IT SHALL BUBBLE OVER AND EAT THROUGH ANYTHING! (THE FLOOR, ETC.)

GLINARIEN THE FAIR

Plans to manufacture a pheremone cologne occupied the interest of several characters for a substantial period of time. Some typical exchanges contemplated marketing strategies, possible competition from other "companies," and plans for research and development.

This message depicts typical comments on the topic.

SUBJECT: CONFIDENTIAL MEMO

CONFIDENTIAL - EYES ONLY

TO: WOMBO
FM: MAVEN
SJ: COLOGNE

WOULD YOU MIND HAVING THE LAB BOYS CHECK OUT THIS PHEREMONE COLOGNE TO SEE IF AS SUGGESTED BY DURUS IT IS IN FACT OUR OWN WOMBPERIGNON CHAMPAGNE WHICH HAS BEEN CUT BY DRANO TO KEEP US OFF THE SCENT (HH)? DURUS' SUGGESTION IS NOT ALTOGETHER FARFETCHED, YOU REMEMBER WHAT HAPPENED HOW HE HELD UP (HH) AFTER BATHING IN THE STUFF AT THE PARTY (sic). I RECALL SPILLING A FEW DROPS ON ME, AND I ENDED UP CHASING FIANNA ACROSS THE GREEN. FIANNA WASN'T RUNNING TOO HARD EITHER I MUST ADD.....!

IF IT REALLY IS OUR OWN STUFF THEY ARE SELLING WE CAN CONTACT LEGAL AND SEE WHAT RECOURSE WE HAVE. OBVIOUSLY LOU AND EDDIE WON'T DO UNDER THE CIRCUMSTANCES. DOES SAL STILL HAVE YOUR SHERMAN TANK?

Characters may travel to distant parts of this fictional world as well as conduct the activities of "everyday life." Often, players refer to some work of science fiction, incorporating stories and characters from novels, movies, and television shows into their activities. Here, elements of both the Pern and Darkover science fiction/fantasy series of novels are incorporated.

SUBJECT: LANGUISHING TOWER CIRCLE

IT'S VERY QUIET HERE AROUND THE TOWER THESE DAYS. OUR KEEPER, CLEINDORI, SEEMS TO HAVE SHUT HERSELF UP WITH THE RELAY SCREENS IN ORDER TO CONTEMPLATE THE OVERWORLD. GLINARIEN IS UNDERSTANDABLY CAUGHT UP IN PREPARATION FOR HER COMING MARRIAGE TO ADONAIR, AND I AM DEEP IN MENTAL CONTEMPLATION

WITH MY WILD MATRIX, ATTEMPTING TO CONTROL ITS
EMANATIONS AS BEST I CAN.

PERHAPS IT'S TIME TO EXTEND A FEW MORE INVITATIONS.
THERE ARE A FEW PERNESSE ABOUT -- DEIRDRE (NOT TO
MENTION KIRITH), AND LOREN OF LUNA. AS THE TWO
"LOST COLONIES" OF THE TERRAN EMPIRE TO DEVELOP
PSYCHIC ABILITIES TO A LEVEL OF TECHNOLOGY, PERN
AND DARKOVER HAVE MUCH IN COMMON AND DEIRDRE
AND LOREN HAVE A GREAT DEAL OF LARAN OR A SPECIAL
KIND.. WE WERE DISAPPOINTED NOT TO WELCOME WEEHAWK,
BUT THE TOWER GROWS SILENT AND INACTIVE. CAN WE
PERSUADE YOU?

TANIQUEL

To add to any confusion that someone unitiated in
the activites that take place on these categories would
feel when confronted with material that appears so
tangential to reality, messages are added to the category
in chronological order, so that the last messages appear
first. For example, a reader would see this exchange
between a new user and a "regular" in the reverse order
of its original composition.

SUBJECT: BELIEVER

THANK YOU GLINARIEN THE FAIR. CARTERINO.

SUBJECT: !

I'M OUT HERE! HI! GLINARIEN THE FAIR!

SUBJECT: I DON'T BELIEVE ANYONE IS OUT THERE

THIS IS MY FIRST TIME ONLINE. I CAN'T BELIEVE
ANYONE IS REALLY OUT THERE! IF SOMEONE IS
READING THIS--PLEASE ACKNOWLEDGE--CARTERINO
THE NEWCOMER

For the most part, members of the fictional communities tend to be active and competent users of the Source, and they impose their own sanctions on subscribers who do not conform to the norms developed within that section of the database. When an entrepreneur continually posted ads for his software firm without deleting the old ads (thus cluttering POST categories and making users spend time and money reading repetitious entries), a campaign to send him "hate mail" was launched after he ignored online requests to be more considerate. Users who were particularly annoyed at him developed a computer file consisting of a lengthy letter that would give the entrepreneur the same frustrations in reading his mail that they had experienced in reading through POST. Finally, a combination of the letter and a personal phone call cleared the matter up to everyone's satisfaction.

The episode ended with an ironic footnote, however. The same users who were crusading for the benefit of everyone reading POST were themselves chastized by other subscribers for breaking electronic norms. In their advertisements encouraging people to send hate mail, they had forgotten to warn others that merely reading the hate letter file automatically sent it to the entrepreneur. Several users who were merely curious and had no desire to impose sanctions on the fellow ended up mistakenly sending him the letter. Apologies all around restored the generally friendly atmosphere in the end.

Although the Source has strict rules governing obscene, objectionable, and abusive material appearing in POST and is quick to delete comments management feels violate those guidelines, users often provide their own sanctions for one another before management has to intercede. The ethnic joke one user entered in POST received such scathing comments that the author deleted the message the same evening, apologizing if he'd offended anyone.

SUBJECT: RIDDLE

WHAT DO YOU CALL A 10 FOOT (INSERT YOUR FAVORITE ETHNIC GROUP IN THESE PARENTHESES) HOLDING A SPEAR?

ANSWER: SIR!!

SUBJECT: RACISM IN CHATTER

(ID number of author of previous message), I THINK YOUR "JOKE" IS IN THE POOREST OF TASTE!
TROLL

SUBJECT: NO RACISM INTENDED

(Troll's ID number), NO RACISM WAS INTENDED. SEE I'M FROM HAWAII. IN HAWAII THERE IS A VAST NUMBER OF NATIONALITIES LIVING ON ONE SMALL ISLAND. WE MAKE JOKES OF ONE ANOTHER BUT WE ARE STILL VERY TIGHT. THIS ETHNIC KIND OF JOKE IS VERY POPULAR IN HAWAII. THAT'S WHY I LEFT THE BLANK SPACE!! SO ALL KINDS OF NATIONALITIES CAN BE ZINGED (EVEN HAWAIIANS).

-----ID number-----

CompuServe's CB simulation offers a parallel situation, although interactions are not so detailed. Due to the limitations imposed by the program, users can

enter only one line of text at a time, so characters and plots do not grow to be as detailed as those on the Source. Still, a considerable degree of detail is attained.

About 25% of CIS users access the system several times a week, and approximately 25-30% of that group regularly use CB. The CB program is patterned after the popular citizen's band radio with its instantaneous multichannel capacity. Users are identified by a "handle," and enter comments as long as one typewritten line (although it is possible to enter several lines sequentially to complete a longer thought). The CB program is operated on a different computer than the rest of the CIS database, the "multiplayer host." This computer allows greater interactivity to take place, making it possible for computer games that require a large number of simultaneous players, such as "Space Wars," to be offered (Baker, 1981; Keener, 1982).

Thirty-six CB channels are offered, but several are reserved for specific purposes. Channel One is for Adult Conversations, Channel Nine is the "help channel," Channel 19 is a general calling channel, and channels 30 through 36 are reserved for semi-private conferences. Users can only transmit on one channel at a time, but may listen in on two additional ones simultaneously. Once the subscriber tunes to a channel, anything she types will automatically appear on the screen of anyone

else monitoring that channel as soon as she pressed the "return" key. Commands to leave the program, check usage statistics, or change a handle must be preceded by a slash (/).

CB handles are generally carried over from one session to the next, and are usually fictional in nature. Bozo the Clone, Sidewalk Surfer, Syntax Error, Captain Video, Columbus Cop, and Baroness von Slink all share the "airwaves." Since one's handle appears on the screen with the channel the user is tuned to whenever that person makes a comment, subscribers often try to spice up their handles by adding typewriter graphics to them. Names such as *****FIREBALL***** or !!!LOLLYPOP!!! are more likely to be noticed.

It is possible to monitor three channels simultaneously without participating in the online dialogs on any of them, but this is discouraged both by CIS management and other users. People who don't introduce themselves as they enter or who merely listen to others are called "lurkers," and users periodically check the readily-available usage statistics in order to determine whether any lurkers are present. If they catch any, someone will type in a message such as HEY SILENT PERSON OUT THERE SAY SOMETHING! or 7 HERE, WHO IS THE LURKER?

CBers exchange their locations and ages, but actual names and other personal information are rarely revealed in the public part of the database. Instead, users who

wish to become involved in more detailed and personal conversations move to the TALK program on the multi-player host.

CBers tend to be proficient in the use of the medium, yet remain helpful to new users. This is important, since the exchange doesn't appear in a coherent manner when the user monitors additional channels. Often the subscriber must juggle several conversations taking place on three different channels while trying to make sense of any of them. The following exchange appeared on the screen in the space of about ten seconds.

(1,WES)	SUG, WHERE ARE YOU?
(30,BUNNY)	NOEL, ARE U STILL THERE?
(1,BERSERKER)	JOB 43.
(30,**POLISH PRINCE**)	SEE YALL LATER
(30,((NOEL)))	YEAH SQUEAKY WELCOME TO THE
	ADDICTING WORLD OF CIS
(1,TERRIER)	!!!!BLIP!!!!
(33,BERKELEY WEREWOLF)	PASS WHAT?
(1,-BLIP-)	OK...CALLING
(30,((NOEL)))	BYE PRICE (sic)
(30,**POLISH PRINCE**)	(A ROYAL EXIT)
(33,ROADHOG)	PASS OUT
(33,KFISH)	PASS THE BEER
(1,SUG BEAR)	NEWPORT BEACH, WES

CB users express a fairly strong sense of group solidarity, particularly those subscribers that comprise the core group. One exchange indicated that CIS had been advertised in a recent issue of Science-82 and that many people had seen CIS ads in a variety of publications. One user queried, IF CB GETS REALLY POPULAR WHAT'LL WE DO? Another replied, HOW DO YOU THINK US OLDTIMERS FEEL? The general consensus by the end of the discussion was that

the expansion of CIS would enable CB to grow in popularity, thus making it more problematic to use.

That feeling of community occasionally prompts users to impose sanctions on others who violate the norms that the community has evolved. Here, White Nite is ignored until he apologizes for the joke that was perceived as tasteless by others.

(1,WHITE NITE)	WHAT DO YOU CALL A FIELD FULL OF
	EPILEPTICS?
(1,**PC'ER**)	W.N. I DUNNO
(1,FARQUOR)	WHITE--(AHM....DO TELL....)
(1,WHITE NITE)	SEISURE SALAD
(1,FARQUOR)	SAND--(GAWD, HANDICAPPED JOKES...)
(1,**PC'ER**)	BOOOOOOOOOOOOO!!
(1,PLUTOR)	NOT FUNNY WHITE NITE
(1,WHITE NITE)	WHAT
(1,FARQUOR)	WHITE--(IN POOR TASTE...)
(1,PLUTOR)	EVEN IN BAD TASTE FOR ME!

(about two minutes go by and other topics are discussed)

(1,WHITE NITE)	WONT (sic) ANYONE TALK TO ME?
(1,FARQUOR)	WHITE--PROBABLY NOT.

(more time passes)

(1,WHITE NITE)	IM (sic) SORRY
----------------	----------------

If user sanctions don't work, the person can be permanently banished from the screen by using the "squelch" command. This makes a subscriber's comments invisible on the screen of any person who chooses to squelch him, and users can join together to collectively squelch obnoxious users. A change in handle doesn't affect the command; the squelch can only be removed if the person negates the command (CompuServe Information Service, n.d.).

Despite unsubstantiated rumors that CIS assigned "wizard accounts" that allow certain individuals to permanently squelch rude users in order to maintain order in CB, the area continues to be largely self-policing, as is broadcast CB radio (Dannefer and Kasen, 1981; Dannefer and Poushinsky, 1977; Kerbo, Marshall, and Holley, 1978; Marvin and Schultze, 1977; Powell and Ary, 1977). The squelch command allows users to apply their own sanctions to those few individuals who insist on using the system inappropriately, and more serious cases are dealt with by CIS management. Very seldom is a user's account cut off due to abuse of the system (Meier, 1982a).

The development of norms and sanctions in the fictional communities reinforces their existence as communities. Like any community, these electronic communities develop their own accepted patterns of behavior, power structures, and processes to socialize new members into the community. All these are necessarily affected not only by their existence as manifestations of computerized communication but also because of their residence with a framework of a mass approach to technology.

CHAPTER SEVEN

SOCIALIZATION AND NORMS IN ELECTRONIC COMMUNITIES

Interacting through the computer not only allows individuals a chance to experiment with social interactions as mediated by technology; it also provides the opportunity for new users to become part of the ongoing communities that exist among subscribers. In order for newcomers to become fully conversant with expected behaviors in this circumstance, others must teach them the values, beliefs, roles, and norms characteristic of the people who regularly utilize the medium to communicate.

Socialization processes are primarily concerned with establishing common definitions of the way a situation is perceived, and thus are particularly important for computer-mediated communication since most people have never been exposed to a mode of communication that operates in this manner. Users develop into experienced communicators and accepted members of electronic communities in four stages. New users have difficulty coping with the very idea of using computers to communicate, and express significant amounts of confusion concerning appropriate techniques of computer use. Once they become somewhat familiar with the technology, they become more

sociable and participate in a wider range of interactions via computer. Throughout this process, more experienced users gradually socialize them into the norms that have developed with specific electronic communities and apply sanctions to those newcomers who ignore or (consistently) violate them. Finally, the newcomer becomes an experienced user and socializes others into the use of the medium, completing the cycle (adapted from Rice, 1980). Experienced users can even find computer-mediated communication a substitutable medium for face-to-face interaction (Rice and Case, 1983).

Strangers in a Strange Land

At first, users experience something akin to "culture shock" when the unfamiliarity of computer commands and the new social dynamics that stem from the lack of interpersonal cues lead to confusion and uncertainty about the correctness of their interactional skills. Users choose a variety of means of coping with the problem, but most explicitly express their insecurity while indicating their willingness to be friendly.

This anonymous note on CommuniTree reflects the user's tentative approach: she's sent some labels to be used in describing herself into the computer and invites others to comment. Just in case that's not the correct way to go about communicating, however, she protects herself by

clearly indicating that she's a newcomer.

I'M NEW AT THIS BUT IT'S FUN. I'M INTO TEACHING, BANJO PLAYING, SPANISH, MASSAGE, HUGS, AND HOT WATER. IT'S STRANGE TO THINK ABOUT THROWING MY DRUTHERS OUT INTO THE ELECTRONIC ETHER THIS WAY. YOUR MOVE.

Similarly, Carterino introduces himself to Source subscribers while expressing his doubt about the vagaries of computer communication (see page 122). Tango likewise expresses his discomfort upon encountering CIS's CB simulation for the first time, but soon relaxes and joins in the banter.

(1,TANGO)	HELP I'M NEW HERE
(1,BLIP)	WHAT U NEED TANGO
(1,TREKKIE)	HELP WITH WHAT
(1,SHADOW)	DOING FINE TANGO
(1,TANGO)	I'M NEW AND I DON'T KNOW WHAT I'M DOING
(1,BOMBSHELL)	WHAT IS SPECIFIC PROBLEM...SO FAR YOU'RE TALKING TO US FINE
(1,SHADOW)	ARE U THE LAST TANGO, TANGO.
(1,HANDY MAN)	HANG IN THERE TANGO! UR IN GOOD HANDS (GRIN)
(1,TANGO)	I'M IN W/ SOME HANDS, THAT'S FOR SURE

One new user, discovering the fictional adventures taking place on the Source's CADO bulletin board category, is so overwhelmed by the exotic nature of the scene that he doesn't even attempt to introduce himself.

WHAT'S IT ALL ABOUT?? CAN SOMEONE EXPLAIN THIS
CATEGORY TO ME? I DON'T GET IT!!!!

Hiltz and Turoff (1978) note that the beginning user of the EIES computerized conferencing system is usually

very conscious of the missing interpersonal cues surrounding facial expression, eye contact, and body movement, and initially tends to try to ascertain some of those cues by supplementing the computer channel of communication with a telephone call or a personal visit. Perhaps because the Source and CompuServe offer national services that appeal to a wide range of interests (rather than the focused conferences among professionals found on EIES), such attempts are not characteristic of new users on these services.

Instead, neophytes are gently immersed in the fundamentals of computerized communication. After only one or two hours experience with the service, they can handle most of the commands necessary for communication, especially if the manual provided by the system operator is kept within close reach.

Developing Computer Fluency

The second stage in the socialization process is marked by the new subscriber's ability to navigate the system in a basic but functional fashion. This can lead to a strong desire to become part of some group that meets via the computer. After becoming familiar with the actual techniques for communication, users begin to discover the ways in which people express their personalities through the various paralinguistic cues, which re-

forces the push toward sociability. Just as infants imitate the actions of adults surrounding them without any comprehension of the meaning of their actions, new subscribers to computer networks copy the communication styles of more experienced users. Of course, these people are not infants but adults (or older children), so that the socialization process resembles adult (secondary) socialization more than it does childhood (primary) socialization. Not only does initiation into computer communication emphasize more superficial personality features than does primary socialization, it is self-originated and voluntary (Mortimer and Simmons, 1978). Still, new users are guided into adopting appropriate kinds of behaviors just as children are when they grow old enough to become members of some community.

More experienced computer users politely "fill in" novices on the expected kinds of behaviors during interactions. This coordinator of a new Special Interest Group on CompuServe found that many of the participants tended to use language he felt was objectionable, and requested that people moderate their online vocabularies.

ALTHOUGH THIS SIG IS A PLACE FOR COMMUNICATION,
I THINK THAT EVERYONE WOULD APPRECIATE IT IF YOU
USED SOME LESS COLORFUL LANGUAGE TO EXPRESS YOUR
OPINIONS. THANKS, KEN.

CommuniTree's Mastodon enters the scene in an unusually boisterous manner on receipt of her password and is politely welcomed. Both responses are friendly,

yet the first stresses the pleasant atmosphere on the system while the second resorts to subtle satire of Mastodon's enthusiasm.

Mastodon

MASTO HAS HIS PASSWORD! YEE GADS! HERE IS WHERE YOU LEAVE THOUGHTLESS COMMENTS AND NASTY HATE LETTERS ADDRESSED TO SAME! THANKS A MILLION!

Oh-Come-On-Now

Mastodon

WHY WOULD ANYONE WANT TO SEND YOU NASTY LETTERS? WHAT HAVE YOU DONE? ANYWAY, I AM SAYING HELLO, AND WELCOME TO THE TREE. YOURS TRULY, KEN GREEN.

Why?

Oh-Come-On-Now

Mastodon

WITH A THUNDER OF HOOVES.....
AND A MIGHTY TRUMPET.....
THE VERY DIGITAL AETHER QUAKES.....
WITH THE ADVENT OF THE MIGHTY !!!MASTODON!!!
.....ANSWER ME A QUESTION, THO', BIG FELLA.....
HOW DO ELEPHANTS MANAGE TO CLIMB TREES?

Somewhat more direct measures were taken on the Source in response to a use who resisted the pressures to follow the lead of the other subscribers who use the Chatter category. The confrontation ended when *Adonair* sent a message berating Troll, an experienced user, for criticizing some of his colleagues for acting in a juvenile manner. To underline his point, he attached several postscripts, of which one challenged anyone to find something childish. He received several replies that let him know how the behavior was inappropriate for the situation, such as this contribution by Avatar, another expert.

SUBJECT: REPLY

(Other topics are discussed.) AS FAR AS FINDING SOMETHING CHILDISH IN YOUR NOTE, THAT MAY HAVE BEEN A FOOLISH CHALLENGE. MOST OF US CONSIDER THE ADDITION OF LARGE NUMBERS OF EXTRANEIOUS AND SUPERFLUOUS PS, PPS, PPPSSS, ETC. (AD NAUSEUM) ONE OF THE FAIREST TESTS OF JUVENILE BEHAVIOR, IF NOT SOPHOMORIC. BE CAREFUL OF ISSUING CHALLENGES YOU DO NOT WISH TO SEE TAKEN UP. I DOUBT YOU'LL FIND MUCH RESPONSE TO YOUR TIRADE. TROLL IS KNOWN AS TOO MUCH THE GENTLEMAN IN THIS GROUP TO HAVE SUCH ASSAULTS ON HIS INTEGRITY BEAR MUCH FRUIT. MAY I SUGGEST, AS GENTLY AS POSSIBLE, A QUIET APOLOGY IS IN ORDER?

AVATAR THE USUALLY MILD

Eventually, *Adonair* toned down his comments, but declined to resist the pressures imposed by the "regulars" in this electronic community. Finally, he broke many of his ties with the group and participated more actively with another group.

Conforming to Norms

The "case" of *Adonair* illustrates a situation where a user is not fully accepted into the community. Normally those who compose the core group of an electronic community allow a reasonably wide range of behavior as long as it offends no one. New users who progress through the initial encounters become increasingly aware of the paralinguistic cues utilized by various community members and begin to use graphics and develop their own personal style of expressing individual traits. During

this third stage in the development of expertise, experimentation with different types of paralinguistic features is frequent and varied.

Norms grow more salient at this point, and the users entering this phase are expected to become integrated into the community if they plan to continue participating. Now, sanctions are applied and increased according to the severity of the offense.

Users who disregard norms can find themselves the objects of directly critical comments from others.. The author of the ethnic joke appearing on the Source (see page 124) merely needed a single polite reprimand to be persuaded to remove it. Those who disregard such warnings may find themselves severely chastized by others and may even be censured by the system operator. Another disgruntled Source user who offended many others by his particularly vitriolic complaints about the service received several equally vitriolic replies. These included comments ranging from

(ID number) TOUGH IT!!! I DON'T LIKE YOUR LANGUAGE AND THE MAJORITY DOESN'T EITHER. I SUGGEST YOU CLEAN UP YOUR ACT NOW.

to

(ID number) WHAT A NURD. -- IT SEEMS THAT THE ODDS ARE AGAINST YOU OH FOOLISH ONE. IF YOU AREN'T PLEASED WITH THE SYSTEM WHY NOT COMPLAIN CONSTRUCTIVELY? SOMEONE WILL LISTEN. JUDGING FROM YOUR VOCABULARY, HOWEVER, YOU ARE PERHAPS NOT CAPABLE OF INTELLIGENT CONSTRUCTIVE CRITIQUE. IF THIS IS THE CASE, I'M SURE THE SOURCE CAN AND WILL LIVE WITHOUT YOU. WHAT I DON'T UNDERSTAND IS WHY THEY LEAVE STUPID COMMENTS LIKE YOURS UP

ON THE COLUMN AT ALL ----- I'D DUMP YOU ON YOUR
SUCKER, AS WOULD A FEW OTHERS JUDGING FROM THE
REMARKS FOLLOWING YOURS.

More serious offenses may be dealt with by simply ignoring offenders until they either acquiesce or stop participating in the group. This tactic can prove especially effective on CompuServe's CB simulation, where all participants are online at the same time. Other users effectively persuaded White Nite to avoid ill-considered humor by ignoring him (see page 128). Just to make sure he is in fact being ignored, White Nite asks for confirmation after a short time. Farquor breaks his silence long enough to ensure him that sanctions are being applied, and finally White Nite apologizes. In this case, a simple "I'm sorry" was enough for White Nite to be allowed back into the group.

Those who insist on ignoring group norms can be punished by more severe means on CB through the use of the squelch command. When a number of individuals use the command, it can completely isolate an offender. That individual is barred from participating on CB, and must turn to other channels of communication in order to be readmitted. Considering the fragility of social links made through computers, such isolation can leave an offender in a very lonely position. The severity of the sanction ensures that it is rarely used and that it is often a temporary measure when activated.

Of course, since these electronic communities take

shape within the context of the mass systems, the system operator holds the final decision in cases where a user is violating group norms. Occasionally, a representative of the firm may contact the individual, through a telephone call or electronic mail, to discuss the situation and suggest an appropriate course of action. Subscribers who flagrantly violate not only norms but the official rules of the system may be removed from the subscriber list at the discretion of the system operator, but this practice is extremely rare.

Virtuosity Attained

In the final stage of socialization, experienced users, who are now familiar with many "esoteric" functions of communicating via computer (such as making bells ring in other subscribers' terminals as they read a message or programming their message to include moving graphics) seem to depend on the computer and may even exhibit signs of addiction to computerized communication. They generally form the core group of some electronic community, and tend to use more paralinguistic features that do less experienced users, developing their own idiosyncratic styles. For example, Farquor routinely uses parentheses to clarify comments on CIS's CB program (see page 128 for an example).

In the even that something does go wrong and one's

expertise might be called into question by apparently unsophisticated use of typing, spelling, or punctuation, highly competent users clearly indicate that they are victims of circumstance and not really as inept as the format of their message might suggest. This apology followed an electronic letter filled with typographical errors: SORRY ABOUT THE TYPING. I'M USING A TERMINAL THAT SHOULD BE SHOT AND PUT TO A MERCIFUL DEATH. SOON.

The experienced users also help new subscribers adjust to communicating by computer and shape the structures of the electronic community by acting as role models for newcomers and enforcing the norms that have developed.

Case Study of the Socialization of a New User

The fictional communities provide particularly clear examples of how the socialization process operates since they not only provide a fixed community but are different enough from the types of communication the novice is already familiar with that a reasonable amount of explicit socialization is necessary. This exchange appeared in the midst of a flurry of controversy among regular users of the Source's Chatter category concerning several subscribers who did not want to conform to the norms set by the group. Finally, the original members managed to maintain control over the community by "exiling"

the deviants to another category and taking special care to initiate new users into their expectations.

This newcomer opens with a message indicating his basic familiarity with the process of computerized communication and the content of the messages being exchanged on the category by mentioning the current activities of the group. ID-B was one of the users being exiled, and the group was concurrently "manufacturing" a phieremone cologne that promised to make several of the fictional characters rich. The newcomer indicates a strong desire to be sociable, but openly invites the regulars to guide his behavior, thus inserting himself between the first two stages of socialization into the use of the computer.

SUBJECT: NEW ARRIVAL
FROM: ID-A

I HAVE BEEN OBSERVING YON COLUMN FROM THE WOODS BEYOND FOR MANY A TURN, AND FINALLY DEEM IT SAFE, AND TIMELY, FOR ME TO JOIN IN.

BUT FIRST, ALLOW ME TO INTRODUCE MYSELF: MY TITLE IS AGHA ARYA THEGN KHAN BA'AL HERU. TURAJONGA ZAI'HERATANI OSARUS D'AESIR. MY NAME OF BEING IS SINGHORON ROCHORON, AND MY FORMAL NAME IS YAKOV N'YAGA ATTELIUS MULAI JARL AMRIC TACHIC KARLUS ZARALLASPA.

I WANT TO JOIN YON WONDROUS GROUP IN TEI (sic) DOINGS: MAY I? I PROMISE NOT TO BE AN ONAGER AS THIS ID-B. PLEASE, LET ME JOIN.

I'LL LEAVE IT UP TO YOU, BUT PLEASE REPLY SOON.

BY THE WAY, THINK YOU COULD NAME THAT COLOGNE AFTER ME?

The others greet him politely, noting implicitly that he does in fact command enough competence over the computer to use it effectively to communicate. He is

welcomed, but polite suggestions are made concerning the length of his name.

SUBJECT: WELCOMES.....
FROM: ID-C

BEGINNER-----AH, WELL MET! AND YOUR PROMISE IS A SOOTHING THING FOR THIS POOR SOUL'S EARS.... THEY'VE SUFFERED MUCH AT THE HANDS OF CERTAIN UNNAMED ONES...BE WELCOME. YOUR NAME, HOWEVER, IT BESEEMS ME, IS A BIT ON THE LENGTHY SIDE..... DURUS? ANY SUGGESTIONS?

AVATAR

SUBJECT: TO "BEGINNER"
FROM: ID-B

BEGINER (sic) OR WHATEVER YOUR NAME IS:

1. HAVE A GOOD STAY AT CHATTER.
2. BE A NICE PERSON.
3. YOU MIGHT NEED A RENAMING.
4. YOUR NAME IS LONG SO CAN WE JUST CALL YOU BEGINER (sic)???

SUBJECT: NEWCOMER
FROM: ID-D

GREETINGS, WHATS-YOUR-NAME, HAVE A PLEASANT STAY IN YON FAIR CHATTER. HOWEVER, ABOUT THE NAME.....PEOPLE DIDN'T LIKE MINE, AND IT WAS ONLY 3 SYLLABLES!

(other unrelated messages)

HEY, GLANCING THROUGH MY NOTES OF BEGINNER'S POST, HE ACTUALLY DID SOME RESEARCH--HIS NAME ACTUALLY HAS A MEANING! ANYBODY ELSE KNOW WHAT IT IS?

DURUS

The newcomer responds by noting the comments and makes a perfunctory attempt to shorten his name. However, it remains conspicuously lengthy. At the same time as he challenges group norms in this way, he strongly implies that Maven, a leading figure in the attempt to exile

nonconformists, can be rude to new users.

SUBJECT: NAMES
FROM: ID-A

OK, FELLERS, I AGREE MY FULL NAME IS A BIT LONG, SO, CALL ME AS MY FRIENDS DO: YNALLASPA (YES, THE FIRST THREE LETTERS ARE TO BE CAPITALIZED): THE YNA ARE THE INITIALS FOR THE FIRST THREE NAMES OF MY PROPER NAME, YAKOV, N'YAGA, AND ATTELIUS, AND THE 'LLASPA IS PART OF MY TITLE AND IS FOUND IN THE LAST NAME OF MY FORMAL NAME, ZARALLASPA.

I DIDN'T EXPECT ANYONE TO NOTICE THAT MY NAME HAS A TRUE MEANING; WELL DONE, YON OBSERVANT DURUS! WHISPER HERE WHAT YOU THINK IT MEANS: YEP, THAT'S RIGHT!

ANYONE ELSE WHO GUESSES WILL RECEIVE A GOLD HILTED SILVER BLADED SKELOT: S-MAIL (Source-Mail) YOUR ANSWER TO ID-A, ALONG WITH 5 MATKEN FOR P&H, AND A SELF-ADDRESSED ENVELOPE. ADDRESS IT TO AESIREAN ENTERPRISES.

THANK YOU ON AND ALL FOR THE POLITE AND GRACIOUS WELCOME THOU HAST HITHERTO EXTENDED UNTO ME: ME ADDS THAT ME ALSO HOPES THAT IT CONTINUES; I'VE NOTICED THAT SOME OF YOU CAN BE RATHER HARSH ON NEWCOMERS (THOUGH SOME OF THEM WERE DESERVING); I WON'T MENTION ANY NAMES, BUT ONE OF THEM STARTS WITH A BIG M.

YNALLASPA

No one immediately imposes any sanctions on him, but no one makes any special effort to respond to his message within the same time frame they had earlier employed. Finally, the author grows impatient and reveals his secret.

SUBJECT: REVELATION !
FROM: ID-A

O.K., I WAS GONNA WAIT FOR THIS, BUT I DON'T THINK THIS LITTLE CHARADE NEEDS GO ANY FURTHER.

I'M ID-D!

HAH, HAH, CAUGHT YA OFF GUARD! NO, I'M NOT

JOKING, IT'S TRUE.

I GOT THE NEW NUMBER WHEN I GAINED ACCESS TO THIS NEW SERVICE, TEXNET, ON THE SOURCE, WHICH TAKES ADVANTAGE OF THE TI 99/4'S SPECIAL GRAPHICS AND SOUND CAPABILITIES, SO NOW I CAN RECEIVE SOUND AND GRAPHICS. BUT ANYWAY, I GOT A NEW NUMBER, AND HAVE TILL THE END OF THE MONTH MY OLD ONE TOO: THEN OUT GOES OL' ID-D.

NOW, YOU'RE PROBABLY WONDERING WHY I PUT ON THIS LITTLE CHARADE: IT WAS TO SEE IF IT'S TRUE THAT YOU'RE REALLY SO HARD ON NEWCOMERS, EVEN IF THEY ACT NICELY: WELL, THAT'S JUST A MYTH; I EVEN CAME UP WITH A RIDICULOUSLY LONG NAME, TO ANNOY YOU; YOU MIGHT NOT HAVE NOTICED, BUT I SPOKE STRANGELY FOR A FEW POSTS: STILL NO PROBLEMS; SO, FINALLY, I ATTACKED MAVEN FOR BEING HARSH ON NEWCOMERS; NOTHING. YOU DIDN'T ATTACK ME, OR ANYTHING. SO I CAME TO THE CONCLUSION THAT IF YOU ACT WELL, YOU'LL BE TREATED NICELY; YOU ACT JUST A LITTLE RUDE YOU'LL STILL BE TOLERATED.

CHATTER'S NOT A CRUEL BUNCH TO NEWCOMERS; NEWCOMERS ARE A CRUEL BUNCH TO CHATTER!

LET THIS BE A LESSON TO ALL YOU ROMPERS!

The final twist follows almost immediately. It seems that Durus/YNallaspa is not the only one to have received a new account number recently, and has created a new game for the experts. With the wisdom of hindsight, it is easy to notice the similarities in the paralinguistic cues employed by ID-A and ID-D: strict paragraphing, relatively complex sentence structures, and many semicolons and colons. With changing account numbers, the experienced users can play at guessing the identity of an anonymous user on the basis of personal communicative style, as suggested by this message.

SUBJECT: WELL, WELL, WELL.....
FROM: ID-E

AHH.....BUT TWO CAN PLAY AT THAT GAME DURUS!!

SO.....WHO WANTS TO GUESS WHO I

AM?.....A HINT.....ALL OF YOU
ALREADY KNOW ME!!.....(SOME HINT,
HUH?).....

HURRY UP AND GUESS!!!!
I DON'T HAVE A NAME TO SIGN!!!!

THE NOBODY...(SNIFF)

BEGINNER

The stages of socialization into electronic community are evident in this exchange. First, YNallaspa is politely welcomed, and a quiet suggestion is made that he shorten his name. His first message indicates that he is not a complete beginner, but has been reading the messages for awhile, so he is immediately included in the sociable exchange that takes place. His impatience causes him to skip most of the third stage of socialization, although he had begun to be ignored by the others due to his reluctance to substantially alter his somewhat lengthy appellation. (He never did reveal its meaning.) Finally, he re-establishes himself as an expert and accepted member of the community.

The creation of communities through the computer involves both discovering the techniques of computer use itself and becoming familiar with the ways others use the system. Neophytes move from a state of complete confusion concerning the basic processes of computerized communication through various stages of understanding that lead them to establish ties with an electronic community. Of course, not all users choose to complete the entire process.

These communities are open to new members as long as they attempt to conform with general boundaries for behavior set by members. Those individuals who fail to meet these standards are subjected to sanctions which increase in severity with the seriousness of the offense. Eventually, new subscribers who learn the appropriate behaviors for an electronic community may socialize others into the group.

Yet these electronic communities only develop on the mass systems. The Source and CompuServe both support a number of these groups, ranging from people who share an interest in determining "the facts" behind the 1963 Kennedy assassination to a group of gay men who use the CB simulator to meet one another. Communi-Tree exhibits some of the elements of the socialization process, but fictional communities have not yet developed, and the range of communities that have been formed is limited to the discussion incorporated in the various focused conferences.

Electronic communities have not developed on any of the other vernacular systems. ComputerTown USA participants simply "interact" with the programs they use, and representatives of the different sites are connected through the newsletter. (In fact, Zamora's plan for establishing a computer link between sites was dropped due to lack of interest by the affiliate groups.) The people who use the computer at the Office for Open Net-

work simply look through database entries without attempting to establish two-way communication through the computer. Even Community Memory, which attempted to heighten the sense of community by utilizing a computer, involved mostly limited contacts geared toward answering particular questions that someone had typed into the computer.

Clearly, the development of electronic communities is strongly influenced by the social context into which the computer that supports those communities is placed. The mass/vernacular distinction serves as merely one indicator of the cultural influences on the structure of electronic communities. The ways in which computer technology is applied shape the kinds of communication that take place through the computer and the degree to which users share a sense of belonging to an electronic community.

CHAPTER EIGHT

THE COMPUTER AS ELECTRONIC COFFEEHOUSE

While computer technology itself structures the development of electronic communities by imposing restrictions set by the combination of hardware and software, equally important patterns are created by the social context in which the technology is embedded. Such "social envelopes" establish the boundaries for communication and influence the types of communities likely to arise. All of the systems considered here, for example, appeal to an audience comprised of private individuals and stress interuser communication far more than do the vast majority of computer services existing today. If one begins with the assumption that the social arrangements of technology represent physical manifestations of human values, it follows that variations in those arrangements can affect social behavior by altering the form and content of cultural practices, and perhaps even reshape the structure of communities.

It would appear reasonable that the mass and vernacular systems, as alternate models for organizing computing technology, would entail different forms of communication and evolve separate types of communities.

The mass systems, with their goal of serving the information needs of the consumer for a reasonable price, might be expected to develop communities that would enable individuals to consume computerized information in much the same way that one consumes materials in other mass media. Groups might revolve around a shared interest in a topic and common readership of a relevant electronic publication. Private communications between subscribers might be encouraged more strongly than public messages.

The vernacular systems, on the other hand, all explicitly state ideologies that stress building community ties and establishing linkages among individuals. Countering alienation is a common goal, and many of the groups attempt to demystify computers in order to utilize them to strengthen the bonds of community. These groups conjure up images of the coffeehouses of the late seventeenth and early eighteenth century: through use of the computer one might well expect to find a modern parallel to the (no doubt somewhat idealized) coffeehouse where convivial discussion and close friendships flourished. Further, coffeehouses served as central information centers in the cities where they were located; an electronic coffeehouse would no doubt fill a similar function.

As information centers, the coffeehouses naturally were places in which speech flourished. When a man entered the door, he went first to the bar, paid a penny, was told, if he had not been to the place before, what the rules of

the house were . . . and then sat down to enjoy himself. That in turn was a matter of talking to other people, and the talk was governed by a cardinal rule: in order for information to be as full as possible, distinctions of rank were temporarily suspended; anyone sitting in the coffeehouse had a right to talk to anyone else, to enter into any conversation, whether he knew the other people or not, whether he was bidden to speak or not. It was bad form even to touch on the social origins of other persons when talking to them in the coffeehouse, because the free flow of talk might then be impeded (Sennett, 1978: 81).

Such rules for behavior certainly characterize the kinds of communication that take place through the computer. The electronic communities that are formed are sustained by the continued exchange of messages by a number of individuals, with no distinction made for any status they may hold in their other roles. The status as "member of this electronic community" is the only credential that matters. The computer appears to facilitate a "rowdy democracy," where all participants have some weight in the outcome of discussions--an electronic coffeehouse (Emerson, 1978; Goleman, 1983).

But paradoxically, electronic communities only appear in fully articulated form on the mass systems, where the overriding ideology would seem to inhibit their development. The vernacular networks, despite their highly elaborated rhetoric about creating a sense of community, offer little example of areas for online communication that facilitate the development of electronic communities. Two factors account for this

discrepancy: the physical location of the terminals used to access the system and the degree of participation that the user is expected to exert while communicating via the computer.

Private Terminals, Public Messages

Individuals who use the systems where electronic communities emerge access the service from terminals or computers located in their homes. Source subscribers use terminals or microcomputers located in their homes (79%) or offices, and nearly 90% are alone when they use the service. More than half met all the people they interact with via computer online, and very few communicate through the Source only with people they know from outside the system. Only 27% of Source subscribers indicated that they were members of computer clubs in 1981, compared with 44% in 1980: using mass-oriented information services has moved from an eccentric trait of a small group of computer hobbyists to an individual activity for many sectors of society in recent years (Beckman, 1982; Rawl, 1981).

Likewise, all CIS subscribers own home computers or videotex terminals, or access the service through computer terminals located at their offices. Although one free public access site is operational at the Capital Children's Museum in Washington, D.C., users

there are not regular users of the service (CompuServe Information Service, 1982).

Similarly, all CommuniTree users must own their own computer or have access to one in order to utilize Gengle's database service. While the potential for a public access site exists, to date all users have been private individuals.

To some extent, the types of communication that take place on these systems echo the social arrangement of the technology: for example, more private message exchange occurs on the systems where user terminals are privately owned. Obviously, users who have unlimited access to their own equipment can use their computer as a private mailbox or telephone line with little difficulty. Since others are not competing for terminal use, it is possible for these users to participate more fully in special interest groups and engage in online real-time discussion with other users without being forced to step aside after a certain time period. The anonymity of these individuals who communicate from inside their homes is heightened by the use of aliases, and those who engage in fictional encounters remove any trace of relatedness to personal experience. And yet, within this context of private interaction and anonymous, outlandish communication, the strongest ties of electronic community are forged.

Public Terminals, Private Messages

Publicly-accessible terminals, on the other hand, concentrate users in one location, and therefore offer an increased likelihood of interpersonal interaction outside the realm defined by the computer. Electronic communication takes a back seat to the face-to-face conversation at the terminal site. The terminal area becomes a place where people meet, and often explain the mechanics of operating the terminal to one another, help others learn new skills, and clarify confusing aspects of the database. In fact, users communicating from public terminals often skip the first stage of socialization into computer communication (confusion) since their questions and doubts can be resolved on a face-to-face basis. A trial demonstration of public access teletext found a strong relationship between heavy use of the terminal and those public sites where a person was available to help others (Elton and Carey, 1983).

For example, the computer is used in public areas at all ComputerTown USA events, even though the group emphasizes the person-computer relationship. CTUSA events concentrate on helping an individual (or perhaps a pair of people) to use a computer program, but interactions surrounding the computers provide assistance to disoriented users and illustrate the insights that various individuals gain. The woman who suddenly came

to understand two mailing list programs (see page 68) could not only aid her own understanding, but might be able to help others figure out similar differences in their programs. Such communication has proved so effective that CTUSA has not needed to establish a formal means of linking participants in the Menlo Park project through the computers.

Similarly, until mid-1982, the only way to access the Office for Open Network's computer was to go to the office and use the terminal there. This, of course, provides a social situation where the user comes into personal contact with the office staff as well as being able to access the computerized information. Recently, however, Smith has established a system where users can dial into the computer and access network information from their own terminals at home. Financial constraints have forced the group to exert more control over the computer than they would like to use. They simply can not afford to purchase a public access terminal, and even the terminal in the office is being loaned by the company from which the group timeshares. One of Smith's goals, however, is locating terminals in public places throughout Denver and letting people walk up to them and type in their messages.

Perhaps the most dramatic example of public access computing is provided by the Community Memory Project, which located terminals in a variety of public places

around San Francisco. The use of community-based information centers rather than terminals located in private homes was considered critical for counteracting the tendencies toward fragmentation and isolation that mark contemporary society. Community Memory attempted to create an environment where small groups of people could congregate and interact on an informal basis not only to democratize information and equalize power relationships, but to nourish a participatory democracy. For instance, one user who had written to the Grateful Dead asking that the musical group release tapes of their concerts received a response indicating that such action might be taken if there was enough popular demand. The fellow entered a message into the Community Memory database asking people to write the Grateful Dead and support his idea. Similarly, goods-and-services exchanges could be completed without the intervention of middlemen, and people sought direct and unregulated ways to come into contact through the medium.

Users learned how to use the system from others waiting around the terminals, and often instructed newcomers themselves after only a few minutes experience. Although an attitude of caveat emptor tended to develop among users, since the group's official policy of no editing or censorship of messages could not guarantee the accuracy or relevance of messages, the public placement of the terminals helped balance the problems. The diffi-

culties that appeared due to inexperience on the part of users with typewriter keyboards, spelling errors, and misunderstanding of the keyword concept were cleared up by social interactions around the terminals (Colstad, 1982; Colstad and Lipkin, 1975; Community Memory, n.d.; Lipkin, 1982; Rossman, 1975).

The communication that takes place directly between and among people at these three vernacular projects tends to outweigh communication via computer. Messages on these systems tend to be shorter, more straightforward, and more instrumental than those entered from private terminals on the mass systems. Since the terminal-area interactions provide a social atmosphere that leads to a sense of community among users, there is little need to create one electronically.

Sennett (1978) points out that people become more sociable when they have some tangible barriers that separate them, protecting their personal private sphere from the public arena in which they participate. At the same time, however, people need specific places in public to bring them together. The mass and vernacular groups thus provide complementary services: mass groups provide the isolation necessary for electronic communities to form while vernacular groups offer computerized communication as a means of bringing people together in person to strengthen community ties in a specific geographic location. The first places the coffeehouse concept within the computer,

the second in the site where the computer is located.

User Participation and Control

The social context of computing involves not only the physical arrangement of the technology and its accompanying values, but also the ways in which the roles of users are defined by the system operators. These definitions of social relationships mold the ways that individuals communicate with one another to a great extent.

A "pure" mass system, for example, would discourage any initiative on the part of users; operators of such a system would prefer to have subscribers pay for the privilege of passively consuming information and perhaps even advertising. Any participation that would be permitted would stress simple responses such as purchasing products, playing electronic games, and responding to questions.

A completely vernacular system would provide a different environment for communication by stressing the interactional capabilities of the computer. Users would be encouraged to actively participate in online discussions and create new databases as they saw fit. The role of the system operator would be limited to maintaining the equipment and facilitating access to the computer.

Obviously, none of the systems under consideration here

represent a model that perfectly conforms to either approach. Still, the six systems can be grouped under one heading or the other in general terms describing the role provided for users as "active" or "passive." This definition concentrates on the system as a whole, so systems that concentrate interuser communication in a small area (such as CompuServe and the Source) are characterized as "passive" systems. Although the special interest groups and CB simulation provide considerable opportunity for user participation within that arena, the system as a whole concentrates on a one-way, center-to-periphery flow of information. Similarly, CTUSA controls the flow of information to users by choosing the programs that users may use and stressing the use of prepackaged programs where users engage in many of the same activities available on the mass systems (playing games, responding to educational programs). CTUSA users are not encouraged to extend their online activities beyond those boundaries.

The "active" systems give users full control over the types of communication that take place and often do not provide any means for system operators to censor any information entered into the computer. There are at best few areas in the database that do not allow the user full participation and control over the content of messages. With no outside sanctions being applied, users are required to keep tabs on each other's activities if they want

to maintain order. Again, none of the systems provides an ideal illustration, although these examples tend to fall closer to the "pure" type than do the passive systems. CommuniTree, the Office for Open Network, and Community Memory all rely strongly on users to supply all the information that is available online. Of the three, only CommuniTree relies on any control from the system operator concerning message content. Gengle instituted a system of moving offensive messages to obscure corners of the database after his San Francisco system received a rash of anti-gay communication last year. When he does "exile" a message (making it impossible to read without knowing the exact command, as opposed to removing it completely from the system), he contacts the author and discusses the matter with that person.

The distinction between active and passive roles for users creates a means of counteracting the disadvantages of terminal location. Users of private terminals who communicate on a system where they are encouraged to take an active role, for example, may find that the isolation provided by the terminal location is countered. Likewise, active users who access a database from a public terminal may create stronger electronic links that supplement the physical connections they have with other users at the site.

Both factors interact to create a social context for

computing. Systems that stress a passive approach tend to be accessed from private terminals and those stressing an active approach by users tend also to provide public access terminals (see Table 2).

Table 2
Social Context for the Six Systems

<u>Location of terminal</u>	<u>User Participation</u>	
	<u>Active</u>	<u>Passive</u>
<u>Public</u>	Community Memory Office for Open Network	Computer-Town USA
<u>Private</u>	CommuniTree	CompuServe Source

Electronic communities would be expected to occur when users of private terminals are encouraged to be active, since the lack of a physical community combined with a forum for interaction provides the opportunity for the growth of electronic community. Yet users of the private-active configuration of CommuniTree have formed electronic communities that lag behind those found on the Source and CompuServe in their articulation. Why, then, should systems that stress primarily passive activity, and provide only a limited arena for active communication, provide the most hospitable environment for the creation

of electronic communities?

Since these services are so extensive and provide such a large number of databases, users can easily become "lost" in the sea of information services. Information overload may join the sheer numbers of databases to dwarf the needs of the individual. A novice, using a computer alone at home, may not only become confused and overwhelmed by the number of databases to explore, but may come to feel alienated due to the one-way character of most of the services. When Carterino first encountered the interactive bulletin boards on the Source, for example, he declared his disbelief that anyone else was "out there" (see page 122). In this case, those areas of the database where interuser communication is not only allowed but encouraged become an antidote to feelings of electronic alienation. Pockets of closely-knit community provide a balance to the influx of information services that populate these systems.

The defining characteristic of the coffeehouses of the seventeenth and eighteenth centuries was the unimpeded exchange of information. A sense of community surrounded such activity; nowhere else in that society could people throw off the trappings of class and enter into a relationship based on their knowledge and conversational skill. Despite the many differences between this society and that, few arenas exist for social interchange without reference to the boundaries

created by age, class, gender, ethnic origin, and a host of other factors. Electronic communities may erase some of those barriers and again erect the image of a coffee-house.

The use of computers to aid human communication is a relatively new phenomenon, however, and the ways that these systems develop over time may alter the potential that they show for the creation of such an atmosphere.

CHAPTER NINE

THE GREAT CENTRALIZATION DEBATE

The arrival of mass and vernacular computer networks as services geared toward the "general public" raises many questions concerning the patterns that inform the evolution of a technology. The very emergence of these groups violates assumptions held both by serious researchers and casual observers of the interaction between computers and society. For example, one popular maxim of technological development concerns the increasing centralization of a technology over time. Through time, the scale of a technology supposedly increases, leading to a higher degree of centralization in the social institutions that surround it. This tendency to integrate systems can stem from economies of scale, the need to coordinate independent activities, and the necessity of controlling lower-level activities in the interest of higher-level ones (Brooks, 1980; McDermott, 1969; Simon, 1979).

When electronic computers first entered the public scene, they certainly appeared to lend support to this assertion. Not only were they delicate, complex instruments, but their efficiency increased rapidly with size, so that having one large computer in a central computing

facility was cheaper than operating several smaller ones with the same aggregate computing power. Starting in the 1960s, however, the construction of minicomputers and microcomputers reinforced a push towards decentralization created by timesharing and remote access. These allowed users to employ their computers from separate locations and use them either independently or in conjunction with a larger central computer. The emergence of mass, and later vernacular, computer systems further extended this trend. While traditional data processing had been hierarchical, isolated, and centralized, with procedures reinforcing the center to the detriment of the periphery, computer networks that were now being established countered these attributes. Clearly, the model of computer-as-centralizing-force is not descriptive.

A second maxim of technological development called into question by the emergence of the mass and vernacular computer systems involves the role of the technology's hardware. The concept that different ideas of social organization require different technologies for their realization assumes that later developments in electronic computing that led to decentralized forms were due to the different types of computers used. Smaller, cheaper, distributed computers seemed to provide different technological environments that contrasted with their large, expensive, concentrated predecessors. Decentralized computing should thus rely on different machinery than centralized computing.

Closer scrutiny reveals a flaw in this argument, however. Both CompuServe (close to the ideal type of mass systems) and Community Memory (close to an ideal type for vernacular systems) utilize mainframe computers. The Source and the Office for Open Network (representing opposite ends of the continuum) use precisely the same make and model of minicomputer. CommuniTree and ComputerTown USA, transitional between mass and vernacular, are the only systems that rely solely on microcomputers. The importance of hardware must be moved to a subsidiary position.

Certainly, the specific hardware configuration of any given system and the historical trends and ideological baggage that accompany computers play important roles. A more significant factor, however, involves the way the computer is programmed. Information technology, unlike mechanical equipment, is highly flexible, since the capabilities of the computer largely depend on the ways it is programmed. Programs that make it easy for users to communicate with one another are likely to encourage such interaction; programs that require users to expend a good deal of effort in order to communicate may facilitate little interchange. Computer programming, after all, is a social activity; it serves as a reflection of some conceptual framework.

Programs can alter social relations, particularly power relationships in society. While it is evident that

data processing is no longer an elite and expensive tool restricted to a limited sector, the question of control over information is fully as significant as the arrangements of control over computing hardware. The location of control over information is important in that it reflects the degree of power that individuals at various points in the social hierarchy hold. The closer one gets to an organization's center of control and decision-making, for example, the more pronounced is the emphasis on information exchange. Those who control the information about a situation are in a position to wield power over events and people's perceptions of those events (Nora and Minc, 1980).

The ways in which the operators of computer systems influence users' control over information reflects the fundamental framework that guides the course of development of the system. The mass systems, for example, exert a fair amount of control: subscribers may suggest databases or services they would like added, but the final decision rests with management, and users themselves may find that information they have entered into public databases has been deleted from the system if representatives find it offensive, abusive, or objectionable. (Users who persist in entering such messages in public areas may find that they personally have been deleted from the system. Private communication between two users is not censored, however.) The vernacular systems provide

no such controls; users are free to enter what they like with no repercussions of an official nature.

Computer networks, like other social institutions, are not static entities, however. Policies and procedures change over time, and in this case, reflect a simultaneous pull toward greater centralization on the part of the vernacular systems and a push toward decentralization by the mass systems. What began as a fairly wide range of alternatives is shrinking to fit within narrower boundaries.

Decentralizing the Mass Systems

The centralized model is commonly associated with bureaucracy, authoritarian control, dehumanization, and alienation, while decentralization is generally equated with autonomy, self-determination, or even self-actualization. These concepts rely on the "common knowledge" that institutions evolve in a linear fashion and that no organization ever becomes less centralized over time. Naturally, lines cannot be drawn that clearly, and centralization always refers to a relative position. Calling the mass systems centralized here depends on the implied comparison with the vernacular projects; calling mass systems centralized in comparison to the first installations of electronic computers would be ludicrous. No matter how firmly centralized any system may be, a

degree of decentralization is inherent in systems where users exert a degree of control, and have the capacity and right to call up the services and information they need (Ellul, 1964; Simon, 1979; Wicklein, 1981).

Both the Source and CIS began life as public services by emphasizing their virtuosity as providers of large numbers of database services to subscribers. These information exchanges were to be largely one-way, and interuser communication was given little attention. User pressure forced the management of each service to include areas in the database for special interest groups, improved user communication, and subscriber-authored commentaries. Users attained the power to influence the organization through their roles as subscribers: economic power led to social power.

Both CIS and the Source began providing additional interaction outside the computer context through publishing newsletters and magazines for subscribers soon after inaugurating their services. These publications encouraged the development of a feeling of community with other subscribers to the service through articles discussing popular databases, "how-to" articles explaining how to use sections of the database, and interviews with users. Currently, the Source's Sourceworld and CompuServe's Today provide a basis for users to interact when not using their computers.

As the Source evolved, it became easier to use. In

1981, the system for accessing databases through typing commands into the computer was supplemented by a "main menu" which allowed users to navigate the database by making choices based on prepared indices. Now, users who knew relatively little about the system could explore various databases without having to study the manual at length. Most important, the menu was developed at the request of users: responses to a survey indicated that 86% of Source subscribers wanted a menu, so Source management obliged. Improvements in the mail system, online chats, and expansion of the bulletin board categories were also due, at least in part, to user requests.

Perhaps the most significant alteration in the Source's policy involves the emergence of the User Publishing section of the database. Prior to 1980, users who wished to provide lengthy statements for others to read were limited to electronic mail, 30-line messages in POST, or making personal files public to all. Otherwise, all information on the system was provided by commercial concerns.

In 1980, however, user protests over lack of access to providing their own information led to the establishment of a section in the database where users could write and edit their own electronic magazines. User Publishing proved to be so popular, both for authors and readers, that arrangements were soon made to reimburse

the authors for storage costs. Today, authors receive royalties based on the number of times articles are accessed. Not all electronic magazines are included in this category, however. Fledgling publications must endure an author-supported trial run to determine the extent of their popularity, and inclusion in the User Publishing database must be approved by Source management.

Similarly, CompuServe has made improvements in the mail system and is extending the communications services on the system at the request of users. The special interest groups, with their attendant publications, were established at the request of users who wanted more capabilities for communicating among themselves. These areas of the CIS database tend to resemble computerized conferences rather than the more static publications found on the Source.

Both services continue to expand the range of database services available to subscribers. That expansion appears to emphasize a somewhat greater degree of user control over the system and more interuser communication. While they are taking on some aspects of the vernacular, however, the mass systems remain firmly entrenched in their fundamental goals of providing a commercial computerized information service to a large number of people. (See Table 3 for an exploration of the evolution of the mass systems through time.)

Table 3
Evolution of the Mass Systems

Characteristic	<u>CompuServe</u>		<u>The Source</u>	
	Original	Current	Original	Current
Hardware	Mainframe		Minicomputer	
Subscription fee	\$20 initial fee; \$5-22 per hour		\$100 initial fee; \$4.25-\$18 per hour	
Fundamental Ideology	Commercial		Commercial	
Target Audience	National		National	
Organizational Structure	H&R Block subsidiary		Reader's Digest subsidiary	
Number of services	Medium	Many	Medium	Many
Private Interactions	Yes	Yes	Yes	Yes
Nonfictional Community	No	Yes	No	Yes
Censorship	Yes		Yes	
Degree of User Control	Low	Medium	Low	Medium
Social Context of computer use	Private		Private	

While the evolution of the mass systems has involved the creation of more areas in the database where users can communicate and the development of more detailed types of communities in those areas, communication among users has remained a secondary goal. While the degree of control that users exert over databases has increased, management of the two systems still retains the ultimate power during discussions of policy. User control extends only to a certain point.

Overall, communication on the mass systems tends to be treated as though it serves merely as an auxiliary to other types of computer services that subscribers can access for a fee.

Centralizing the Vernacular Systems

Since the vernacular groups explicitly state the ideologies that guide their actions, any shift in practice on the part of system operators provides an indicator of patterns of change more easily identified than those of the mass systems. Since the ideology of the mass systems is an implicit one, it is difficult to determine precisely whether changes reflect alterations in policy or simply the implementation of new services with no particular end in mind. It is clear, however, that the general direction of the trend is toward decentralization and a greater degree of user control. At the same time, the vernacular systems appear to be evolving in the

opposite direction. As they mature, these systems are becoming more differentiated and hierarchical in their organization and exert more control over the content of messages on their systems. Simultaneous demands for structure and flexibility create a tension between the ideal of the collectivist democratic organization and that of the bureaucratic organization; the vernacular systems appear to be undergoing an evolution that recapitulates the Gemeinschaft/Gesellschaft shift in microcosm. (Cafferata, 1982; Rothschild-Whitt, 1979).

Stabilizing the Transitional Systems

CommuniTree and ComputerTown USA incorporate elements of both the mass and vernacular models, and thus occupy a position on the continuum that serves as a bridge between the two approaches. While they can be identified more clearly as vernacular systems, they are taking on certain aspects of the mass approach that appear to provide a certain amount of stability for each system as it grows larger and more complex over time.

For example, Dean Gengle has begun to employ what he styles as a "soft censorship" on his Flagship Tree in San Francisco. Although offensive messages are not deleted completely from the system, the institution of the practice indicates a greater degree of control over user actions than existed previously. Gengle emphasizes that the firm is growing, and underlines that with a recent relocation of the Group's office. Until recently,

both the overall management of the system and the computer that housed the San Francisco Flagship Tree were situated in Gengle's apartment on the top floor of a "middle class commune," a cooperative house where residents of private apartments shared some common rooms on the first floor. The CommuniTree office was moved to a separate building in mid-1982, and Gengle points to the move as an indicator of the firm's evolution. "We're moving out of our cottage industry phase," he explains. "We're now moving into a community media phase" (Gengle, 1982b).

In the future, Gengle hopes to establish Flagship Trees across the continent, placing them in the major metropolitan areas. This effort will necessitate greater degrees of coordination among the independent local Trees than currently exists.

In the same vein, ComputerTown USA has had to institute procedures for maintaining relations among the rapidly growing group of affiliates it has engendered. While CT/Menlo Park became more organized as a result of receiving an NSF grant, due to the need to conform to regulations imposed by the National Science Foundation concerning direction of the project, project workers have attempted to maintain some of the flexibility that characterized its early days when private individuals travelled from place to place with their computers. As more residents of Menlo Park become computer literate, the functions of instructing members of the community

have been delegated to a number of people who have gone through CTUSA's sequence of courses and workshops.

In order to strengthen CTUSA's role as a nationwide center for the dissemination of information concerning computer literacy, staff members publish a newsletter, the "implementation package" detailing procedures for setting up such a project, and a series of outlines for computer literacy activities. A current concern is creating a national or international association to link local projects with the Menlo Park center. CTUSA has recently begun requesting fees for their publications, since the National Science Foundation grant will soon be terminated. While the fees charged are not inaccessible, the introduction of the practice indicates that the group is moving away from its former function as a free-of-charge community service.

Both CommuniTree and ComputerTown USA represent services that attempt to balance their needs to keep themselves afloat financially with their desire to provide a useful service to the community. In order to better achieve those goals, they offer a service which appears as an amalgam of the mass and vernacular models for computer communications technology. (See Table 4 for a more detailed examination of the evolution of these services.)

Table 4

Evolution of the Transitional Systems

Characteristic	<u>CommuniTree</u>		<u>ComputerTown USA</u>	
	Original	Current	Original	Current
Hardware	Microcomputer		Microcomputer	
Subscription fee	None		None	Small
Fundamental Ideology	New Age Commercial		Educational	
Target Audience	Community		Community	
Organizational Structure	Egalitarian Network		NSF project	Network
Number of Services	Medium		Few	Medium
Private Interactions	Partial		No	
Nonfictional community	Yes		No	
Fictional Community	No		No	
Censorship	No	Partial	Partial (implicit)	
Degree of User Control	High		Medium	
Social Context of Computer Use	Private		Public	

"Massifying" the Vernacular Systems

The remaining vernacular systems exhibit more of a change towards a mass model over time than do the transitional systems. While retaining the essential elements of the vernacular approach, both the Office for Open Network and Community Memory have incorporated certain traits reminiscent of the mass approach.

The Office for Open Network hopes to expand in the future, but does not actively engage in advertising or efforts to increase membership. The yearly subscription fee was raised from \$30 to \$40 in the fall of 1982 in order to cover the increased costs of operating the network. The network itself has split into two groups, the original network and a more focused Job Network. The atmosphere in the new arrival is more formal: both users and workers seem to dress more formally and conversation concentrates on the matter at hand, rather than wandering through a number of topics of interest. While the Job Network is still very decentralized, it places more control over information in the hands of networkers, since they act as intermediaries between employers and potential employees.

Recently, Smith has established an arrangement where Open Network users can dial directly into the computer through a special account and access Electronic Notebooks (conferences and electronic publications on various topics). Smith refers to it as a "Linkage

Support System," and emphasizes that the purpose of the system is to provide an opportunity for users to decide whether they want to contact one another. This development represents a move away from the physical community stressed by the vernacular approach that marked the original set-up and toward the electronic community concept that characterizes a more mass approach.

Perhaps the most dramatic shift towards the mass approach has been made by Community Memory. As the system that most closely approximates the vernacular type among the groups examined--it started as a completely nonhierarchical operation with no operator control over messages--Community Memory represents the furthest extension of the trend towards decentralization of computing. After nearly a decade of dormancy, however, the Community Memory project appears to have made something of an about-face towards a more centralized approach.

While Community Memory was in operation, all members of the group were considered equal in decision-making power, but at present, parts of the group are moving toward a more hierarchical structure. In order to support the next incarnation of Community Memory, a software company has been formed: Pacific Software will donate their first \$100,000 in clear profit to Community Memory for the establishment of a second phase of the public access experiment. The group markets the Sequitur database management and word processing system designed

by Community Memory programmers for use in automated offices.

The first two sales of Sequitur intensified the gap that was already growing between the public interest group and the group of programmers hired to work on Sequitur. Selling a system to the Presbyterian Church did not bother anyone, but when the Navy put in an order, meetings were held to discuss the morality of selling to that organization. Finally, the consensus was that selling to the Navy would be no worse than selling to the University of California, with its substantial interests in defense-related projects such as the Lawrence-Livermore Laboratory. However, Lipkin did note that he would not consider selling some of the group's work designing microprocessors to the armed forces. (Community Memory, 1981b; Lipkin, 1982).

Phase Two of Community Memory was scheduled to begin in 1979, but at present it is not likely that it will appear before the middle of 1983 at the earliest. The basic concept will remain the same, but the project will include more terminals, with clusters of about twelve terminals forming nodes. The central computer will be a Digital Equipment Corporation LSI-11, a fairly inexpensive minicomputer, and the dumb terminals will be connected by high-speed modems linked with telephone wires. As nodes arise, they will be linked into a regional (but distributed) network, and each will provide

both a local and a network-wide focus. Eventually, the operators envision the creation of a national network.

Project workers hope to produce a cheap system that can be expanded in small increments, works even when parts are broken, does not lose much information when the system does crash, and can be repaired easily by people without much training in electronics. The initial system will have facilities for simple keyword and menu-assisted searches and basic screen editing. Later, experiments will be done with user participation in order to develop better means for entering, locating, and maintaining information. Currently, the software is being developed using the "C" language on DEC LSI-11s and Intel 8080 microprocessors (Community Memory, 1981a).

Although terminals were made available free of charge in the original experiment, fees may be charged during the new phase. This will be determined locally by the community groups and associations that will govern local nodes. Since the hardware is relatively inexpensive, community groups may even be able to purchase the system outright. Other options being considered are attaching coinboxes and charging about five cents for each screenful of information accessed, charging subscription fees, or having another group underwrite the costs for the public. In short, the self-determining information exchange should also be

self-supporting so that community control also means community ownership of the system.

The new system will also incorporate a menu structure that will enable both beginners and experts to use the system in a manner compatible with their own level of expertise (Colstad and Lipkin, 1975). Once users type in a message, they may simply choose keywords or follow a series of menus that indicate more precisely how they would like the message categorized. "It will still be possible to add any user-generated keywords desired, but the word tree menu should help rationalize keywording," states project member Sandy Emerson (Emerson, n.d.: 6).

As the database in a given node grows, Community Memory workers feel that directories and indices will need to be added, a browsing capability installed, and a librarian or guide role established in order to help organize the information. Instead of allowing this role to emerge spontaneously as it did in the previous phase, however, now Community Memory envisions the governing agency of the node assigning one of its members to fulfill the role.

Each of these activities represents a movement of Community Memory away from the vernacular model and toward the mass approach. In part due to its period of dormancy, Community Memory seems to have made greater shifts towards the mass model of organizing computing than have the other systems (see Table 5).

Table 5
Evolution of the Vernacular Systems

Characteristic	<u>Open Network</u>		<u>Community Memory</u>	
	Original	Current	Original	Current
Hardware	Minicomputer		Main-frame	Micro-computer
Subscription fee	\$30/year	\$40/year	None	Small
Fundamental Ideology	Exploration of ideas		Democratic communication	
Target Audience	Undefined		Community	
Organizational Structure	Network	Differentiated network	Collective	Differentiated collective
Number of services	Few	Medium	Medium	
Private Interactions	No		No	
Nonfictional Community	No	Yes	No	
Fictional Community	No		No	
Censorship	No		No	
Degree of User Control	High		High	Medium
Social Context of computer use	Public	Public, Private	Public	

Each of the vernacular systems, whether representing a transitional style or a model more closely allied with the "pure" vernacular type, have moved away from the vernacular end of the continuum to some extent. Fees are either established or increased, the operation in question attempts to become the focal point for linkages among similar projects, the organization of the project splits into separate "departments," and the degree of operator control over the information of the system increases. Just as mass systems take on aspects of the vernacular, so too do the vernacular groups develop characteristics resembling the mass model.

Technologies of the Middle Range

These developments have led to a fair amount of bitterness on the part of observers of community media. Critics point to the fragmentation of the public into distinct interest groups, obscured relationships between various interests, and unthinking localism that masks the complexities of issues that stimulate political reality across territorial boundaries (Salter, 1980). Such criticisms stress the disappointment accompanying reality's failure to measure up to the dramatic billing that alternative journals have given grassroots computer projects.

Such critics view the "massification" of the vernacular groups with a cynical eye. Rather than posing a serious threat to large-scale computing firms, they assert, grassroots computing functions to placate a potentially hostile public by endearing individuals to the technology that threatens them, thus providing competent industrial fodder, a new type of consumer, and encourages technical, economic, and social centralization (Clement, 1982; Taylor, 1982).

Certainly, community-based computer projects legitimate the introduction of the technology into society by appealing to a sector that normally would not have the opportunity to use it. Except for the Office for Open Network, all the vernacular groups examined here uphold ideologies involving the extension of computers to groups that do not have access to sophisticated technology. However, despite their contributions to local control over computers, these groups do not question that computers have intrinsically beneficial qualities. Instead, they accept the technology as a particularly useful tool, and move ahead into considerations of the different ways to arrange it in order to facilitate community cohesion.

These approaches provide a useful political viewpoint concerning the development of computing but ignore

the "big picture." The simultaneous movement toward vernacular approaches by the mass systems and toward mass approaches by the vernacular systems suggests that certain types of social organization are most appropriate for these technologies designed for use by individuals. In fact, it appears that the technology can be most useful for the development of communities, and its adoption is related to moderate size, wealth, and access to information of the organization (Haight and Rubinyi, 1983). Groups that plan to utilize computers to facilitate interpersonal communication will be most effective when they structure the technology in a manner that is neither completely mass nor completely vernacular.

The two types of services seem to be evolving toward an approach that combines elements of each. Some sort of fee is needed to support an ongoing system, and a fair amount of user control over communication remains essential for the continued success of a project. Neither a completely controlled nor completely uncontrolled service is likely to survive for long. As systems grow, some means of easing access to information for beginners and organizing it in the database appears to be useful.

At the same time, the specific arrangement of the technology remains flexible. Each of the six systems upholds a unique ideology and attempts to deliver a

distinctive service. As such, these six groups may be classified as "mid-level" technologies, those technologies that are technically sophisticated but not capital-intensive, devices on the edge of the scientific and technological frontier. Although sophisticated equipment and knowledge are required, enormous funds and huge laboratories are not. This sort of technology may be organized in a variety of ways: small, medium, or large-scale (Etzkowitz, 1982).

The six systems are evolving from a bi-polar situation where they represent distinct approaches to the technology to a middle ground where many types of groups share certain commonalities. The imperatives of the technology itself, problems evolving from the historical development of computers, lack of government regulation, and the economics of operating such services all contribute to the final configuration of the systems.

This middle ground involves a participatory mode of communication, since users recognize that a diversity of lateral channels means nothing without a corresponding diversity of information sources. At the same time, however, these users face a trade-off: the deluge of information must somehow be sorted out, screened, and arranged so that individuals are not subjected to information overload. In an information society, certain economies of scale apply to the information environment.

the idea of each local computer bulletin board system carrying national news as well as local is absurd. Some functions can be handled most appropriately by a centralized organization (Martin, 1978).

The need for participation must be seen within the context of other concerns, however, and the potential for both electronic communities and geographic ones to be strengthened via computer use recognized. While mass and vernacular approaches appear to be (more or less) converging, each approach still offers a different perspective concerning computers. After the relatively short period of time that such services have been in existence, it is not possible to identify the precise elements of each that will comprise the "service-of-the-future." Both contribute important aspects, however, and the evolution of computer communication systems for the public may provide insights into the development of a technology while at the same time serving the public interest.

CHAPTER TEN

ELECTRONIC COMMUNITIES AND DEMOCRACY

The experience of the mass and vernacular computer communication projects reflects the tendency of communications technology to work simultaneously to bring together and fragment social groups. The development of computer networking rests on a delicate balance between these centrifugal and centripetal pulls resulting from a technological extension of community (Bell, 1979). Since technological development is itself a social activity, it is responsive to social direction and must be compatible with existing social conditions. Our choice of technical structures influences patterns of work, travel, consumption, communication, and the like for long periods of time following their introduction. The decision-making process that leads to those choices results in a social situation where people who are located at different points in the social hierarchy possess different levels of power as well as unequal levels of awareness (Bunge, 1979; Calhoun, 1981; Heibroner, 1967; Winner, 1980).

The potential to be seduced by the "glamour" of new technology remains all too real. Sackman (1971), for example, positively glows with delight over the possibility

of using computers as a catalyst for a "democratic renaissance." Likewise, Florman unwittingly points to a danger in our reliance on technology while attempting to praise it: "Every engineer has experienced the comfort that comes with total absorption in a mechanical environment. The world becomes reduced and manageable, controlled and unchaotic" (Florman, 1976: 137). Democracy, in contrast, has been built on values that bear little resemblance to such a world.

Computers can decentralize individual awareness while at the same time centralizing power. To date, they have largely been used to conserve our social institutions, immunizing them from enormous pressures for change. Information technology is a tool that functions in accordance with the social system in which it exists, and cannot on its own create real democracy. Free discussion among citizens in the public sphere is essential for the development of a democratic society (Goldsan, 1975; Qvortrup, 1982; Weizenbaum, 1976; Zingrone, 1981).

Two basic assumptions regarding information form the basis of the Western democratic tradition: (1) the inherently positive value of a widespread distribution of information and (2) use of the specialized knowledge from technical experts in the attainment of social goals, including the creation and maintenance of a social power base. The free flow of information through society by

means of the press and associations of citizens is critical for the functioning of democracy. Associations, which cannot be very powerful unless many people join them (implying that they are spread over a wide area), must rely on the press as a way of communicating with one another. Equally important is the role of the press as a keeper of the historical record for a society (Tichenor, Olien, and Donohue, 1976; Tocqueville, 1969). Today, of course, the press has turned into "the media," and as such, allegedly allows information to spread to any sector of society indiscriminately.

However, the division of labor in society creates different conditions for the development of knowledge within different sectors and for different people. When this division of knowledge leads to certain groups being privileged and others being screened off with respect to certain types of information (as it almost always does), knowledge gaps arise. The inequality here is not simply due to an uneven distribution of information or factual knowledge but more significantly involves a varying ability to analyze, interpret, and control consensual reality. If access to information services is not universally available throughout a society, then those already "information rich" may reap the benefits while the "information poor" get relatively poorer. This widening of the gap can increase any tensions existing between the two groups (Abrahamsson, 1982; Parker and Dunn, 1972).

The mass and vernacular computer communication groups appear to provide a potential solution to the problem of the knowledge gap, since they extend computer power to the "general public," and in some instances provide public access to the technology free of charge. Projects such as ComputerTown USA, which attempts to educate the entire community, or Community Memory, which seeks to increase access to computer technology, certainly appear to offer a solution. Even the public access terminal that CompuServe Information Service maintains at the Capital Children's Museum in Washington provides a degree of public service.

Despite the potential of the personal computer for eliminating (or at least lessening) the knowledge gap, however, it also can serve as a prime tool for the further development of an information elite, since it offers users better access to and greater ability to manipulate information. Already, personal computer owners reflect dominant groups in this society: they are overwhelmingly white male professionals with at least some college education. Among the groups not buying personal computers at present are women, racial and ethnic minorities, those with little education, people whose jobs have a low information content, and the elderly (Nilles, 1982).

This difference reflects the broader social context of the knowledge gap. The information poor not only have less information, they also have less education, income, and less opportunity to gain and use information. This in-

tensifies the gap, for it is widened by differences in communication skills between information rich and information poor as well as differences in education, prior exposure to information concerning certain topics, the broader social contacts of the information rich, and selective exposure, acceptance, and retention of information by the individual. Abundant and cheap information does not by itself bring about information equality; people must also learn information skills (Dervin, 1980; Paisley, 1980; Tichenor, Donohue, and Olien, 1970).

Of course, retaining the knowledge gap also serves certain functions in society. Ignorance on the part of certain sectors of a society preserves privileged positions by virtue of the potential to control access to specialized knowledge, reinforces traditional values, and preserves stereotypes. The use of information technology for democratic purposes therefore must be placed within the larger social context of struggles against the strictures of class, gender, and ethnicity (Moore and Tumin, 1949; Young, 1982).

Yet information technology is being used to create electronic communities through both the mass and vernacular approaches. Since information services tend to be nonpolluting, energy efficient, mind expanding, and (sometimes) enhancers of group interaction, they seem to provide a reasonable path to preserve democratic processes

and prevent domination by an information elite (Dordick, Bradley, and Nanus, 1981).

The kinds of communities that develop through both the mass and vernacular systems emphasize the active participation of all members and tend to be structured in a nonhierarchical fashion. Despite the overall context of the mass systems as encouraging a passive consumption of information services, the atmosphere in the electronic communities stresses a considerable amount of interaction among participants. Users become members of a public rather than members of an audience.

Members of a public participate in discussion revolving around issues in which they are interested, and they argue the matter out in such a way that everyone's opinion is influenced by everyone else's. A member of a public may write a letter-to-the-editor, subscribe to magazines and newspapers which give information to "her public," attend a forum which features a speaker discussing an issue of interest--or become an active participant in a computerized conference, special interest group or electronic community.

A member of an audience, on the other hand, is more passive. Although audience members are associated with others who act in similar ways due to a common source of stimulation, they do not enjoy the interactive contact with one another than members of publics do. The growth of the mass media has emphasized the development of audiences more than publics, and the mass-oriented computer networks

have followed that trend (Form and Miller, 1960).

Users of those networks have resisted that trend, however, and have struggled to create areas in the database where they might behave as members of a public if they so desire.. They are joined by users of the vernacular systems, where the community cohesion begins with a cohesion based around the geographic location of the computer terminal. Each of the vernacular groups came into being with a goal of providing a means by which individuals could use communications technology to interact as members of a public. As the two models converge, these communities are strengthened by the merging of the electronic and physical communities.

The emergence of these pockets of community provides a promising and democratic counterpoint to the expansion of large-scale, technocratic, mass-oriented culture. Toennies himself feared the possibility of the extinction of Gemeinschaft due to the spread of Gesellschaft.

The entire culture has been transformed into a civilization of state and Gesellschaft; and this transformation means the doom of culture itself if none of its scattered seeds remain alive and again bring forth the essence and idea of Gemeinschaft, thus secretly fostering a new culture amidst the decaying one (Toennies, 1955: 270).

He did, however, offer some hope in that new institutions that would be gemeinschaftliche in nature but adapted to Gesellschaft culture might develop. These

would provide a balance to the legal-contractual individualism of the dominant culture through their attempts to regain the community spirit through the simulation of the spirit of Gemeinschaft. (Appelbaum, 1970; Toennies, 1955).

Gemeinschaft is, of course, continually recreated in the social interactions that take place in families, playgrounds, neighborhoods, religious congregations, work groups, and many other arenas. Electronic communities, both mass and vernacular, offer another example of these pockets of community that grow in the midst of a larger society that stresses entirely different values. Both the mass and vernacular systems offer options for building communities that extend the principles of Gemeinschaft.

Our quest for community should not ignore such alternatives.

APPENDIX A
SAMPLE AND METHODOLOGY

This thesis explores the nature of certain technologically mediated social interactions. The use of computer-mediated communication as a way to create or enhance a sense of community among individuals is a new phenomenon in our culture, and so this research serves two functions. It not only attempts to provide insight into the ways in which communication influences the development of electronic communities, but also presents a social history that chronicles the evolution of computer technology.

As a preliminary investigation of these topics, this research is descriptive and exploratory in nature. It is an attempt to present a picture of computer-mediated communication, identifying the range and characteristics of interpersonal communication via computer while taking into consideration both the immediate social context of the situation and the broader cultural milieu of contemporary American society. Throughout, the cultural meanings that participants themselves attach to the particular social situations in which they are engaged are emphasized.

In short, I wanted to set forth the boundaries of

this new world of computer-centered communities and map its features as well as develop some understanding of the links between the electronic world and the more mundane arena in which we conduct most of our everyday activities.

Sample

My goal of examining alternative models of organizing individual communication by computer delimited the choice of cases to be included from the beginning. The necessity to include only those groups which provide interuser communication capability as part of a service geared to the general population disallowed the vast majority of computer systems in existence today.

Although many computer systems offer electronic mail and computer conferencing to their users, few aim their efforts at the "average citizen." Most are privately owned and operated, and many others focus their attention on a limited audience. The Electronic Information Exchange System (EIES) of New Jersey and the Planning Network (PLANET) in California, for example, both offer significant opportunity for user communication but focus their attention on academic and business users.

Similarly, despite the emergence of videotex technology as a means of computer communication for the private individual, the technological limitations of the keypad protocol for data retrieval simply do not

provide for as much intersubscriber interaction as the complete keyboard model provided by full-scale computer services. In addition, most of the videotex systems currently in operation are undergoing technical and marketing trials, and thus do not represent situations involving long-terms, continual computer use.

Both the Source, operating out of McLean, Virginia, and CompuServe Information Service (CIS) of Columbus, Ohio, have offered mass market computer services since 1979. While their overall approach is similar, specific differences in the procedures subscribers use while retrieving information, kinds of intersubscriber communication, and the electronic communities formed make each service unique. Thus, both have been included to clarify the range of communities formed as part of a mass approach to computerized communication.

The CommuniTree Group forms a bridge between the mass and vernacular types of computer systems. It was selected as an example of a community bulletin board system, and also because the firm presents a New Age alternative to the software development and marketing practices of traditional computer firms. Although several CommuniTree bulletin board systems are currently in operation, only messages from San Francisco's Flagship Tree are included here.

Likewise, although ComputerTown USA functions as an organization that links several local computer literacy

projects together, only the Menlo Park, California, project is examined in depth. Since that site serves as the center of the network and is the primary model for computer literacy projects geared toward the community, it provides an apt example of the emerging community-based vernacular projects.

The Office for Open Network, based in Denver, subordinates the use of their computer to their primary goal of extending interpersonal communication. The computer is used for "conventional" applications such as generating mailing lists as well as for networking. This project serves as a model of networking groups that have emerged in recent years, and the avowed lack of focus of the Office allows the type of community formed among users of the network to shed light on a variety of other, more focused projects.

Finally, the Community Memory Project, while not currently operational, was one of the first experiments in vernacular computing, and functions as a model for many projects attempted today. Community Memory represents a wide range of vernacular uses of computers for communication.

These four groups are the best-known, most accessible for study, stable over time, and illustrative of the types of electronic communities that have been formed on vernacular systems to date.

While the results of this research should be taken

as primarily representative of the systems discussed here, and generalizations to other computer systems should be approached with caution. I feel that these systems more than adequately illustrate developments in mass and vernacular applications of computer communications technology. The trends identified here should prove generally applicable to a wide range of computer systems.

Methodologies Employed

This research, completed between December 1981 and November 1982, is largely qualitative in character, although quantitative methods have been employed when appropriate. Since no one has previously examined the world of mass and vernacular computing in depth, and this research is exploratory in nature, my aim was to seek new insights rather than to test assumptions or hypotheses. My concern was to provide a comprehensive formulation of the characteristics of interpersonal communication via computer and to establish a foundation for further investigations into the causes and consequences of its dynamics (Bogdan and Taylor, 1975; R. Emerson, 1981; Filstead, 1970; Lofland, 1971; Miles, 1979; Yin, 1981).

Since the organizational and technological structures of the six systems differ considerably, it was necessary to utilize a variety of methodologies during the course

of the study. A combination of observational techniques, qualitative content analysis, interviewing, and questionnaire data provide the foundations for this analysis.

Observational Techniques

During the course of the study, I examined the six systems through observation and participant observation of the functioning of the computer databases themselves, and by collecting unobtrusive measures concerning the organizational style of the system operators during the on-site interviews.

The databases of the mass systems are easily accessible via remote telephone line; of the vernacular groups only CommuniTree offers a similar situation. The Source and CompuServe each awarded me a free research account to study the content of the databases on their systems. Each was simple to access through telephone lines that connected a Cornell-based computer terminal to the service by a local telephone call. Despite CommuniTree's apparent availability for research, however, the cost of dialing San Francisco long distance to gather data on a continuing basis was prohibitive, particularly since the research was largely unfunded. During the period of my research, I attempted to gather comprehensive information concerning the offerings of each service, communicate with other users, and pay particular attention to those areas of the database where interuser communication took place. I took field notes during and immediately following daily sessions online.

Since I had no access to the databases of the vernacular groups over long periods of time, I simply observed the structure and content of their databases while visiting the sites of the various groups. In addition, each offered me printouts of sample messages from their systems. (Since ComputerTown USA provides no forum for online interuser communication, no messages were collected from that system.)

Therefore, my analysis of the database content stems from participant observation as a user of the system for the mass systems, and simple observation for the vernacular groups. Certainly, this difference in exposure affected my understanding of the psychological reactions experienced by users; however, the emphasis of this analysis stresses the entire system, thus moving the issue into a somewhat less prominent position.

Qualitative Content Analysis

Since I obtained copies of entries in the databases of all the systems (with the exception of CTUSA), messages were analyzed in terms of both their content and format via qualitative content analysis. The choice of a "literary" approach to cultural artifacts such as computerized messages attempts to uncover the hidden assumptions and latent meanings that can be easily mislaid in the course of a more quantitative examination. Elements such as stylistic treatment, tone, imagery, and metaphor become equally as important as the conventional

categories of frequency of appearance of items, position of the message, and proximity of textual elements (Gerbner, 1969; Gitlin, 1980; Glassner and Corzine, 1982; Hall, 1975).

In the same vein, I analyzed the publicity materials extended by each network in order to augment the data concerning organizational style, ideology of the system, and other information gathered through interviews.

Interviews

A comprehensive understanding of each of the systems cannot be attained without understanding the ideologies expressed by the operators of each project. Over the course of a year, I interviewed representatives of each group by telephone and exchanged correspondence with each, and visited each of the projects for one or two days in order to have the opportunity to expand on those interactions by means of a personal interview. During the on-site interviews, I loosely structured the conversation to cover topics such as the background of the system and the ideology of the operators. Unobtrusive measures concerning the "style" of the organization were also obtained through observation of the office setting, dress, and manner of the operators (Webb, et al., 1966).

During these interviews, I attempted to establish rapport by adjusting my clothing and personal style to my expectations of the norm for that group. I expected the Source to be a more formal organization than Community

Memory, for example, and so dressed in a more conventional "business" style when I interviewed Source officials. However, any bias that may have arisen due to my age, sex, or appearance was minimal, since I already had developed a history of interacting with the people I interviewed. Any momentary discomfort soon dissolved after a reference to the series of letters and telephone calls exchanged over the past several months.

I used a micro-tape recorder for several of the interviews, with the permission of all participants. However, tape was not always the most appropriate means of recording, particularly when the interview involved a large number of people (as it did at Community Memory), or walking around to a number of offices or locations. In those instances, I simply took notes or relied on my memory to aid later notetaking. A standard part of each interview involved someone showing me how the computer operated. Perhaps because this signaled the imminent close of the interview, the atmosphere almost always became more relaxed and friendly at that point. Even though I often left the tape recorder running, any tension of maintaining a guided conversation seemed to dissipate, and the shared focus of using the computer provided a readily-available backup in case of gaps in the conversation.

The interviews also functioned as a forum for the system operators to clarify what benefits they expected

to receive as a result of participating in my research. Each group requested a copy of the final report, and indicated how they would like certain elements of the data presented. For example, the operators of the Office for Open Network negotiated a settlement that allowed me to quote directly from their computer files if I removed the names and telephone numbers or the originators of the messages, in order to protect their privacy.

Questionnaire data

I had wanted to provide an across-systems measure by administering a questionnaire to the users of the various systems. This would have allowed me to compare demographic compositions of the user population of the various systems as well as provide a standard measure of the types of frequencies of use. Unfortunately, I was only able to do that for one system, the Source. CompuServe, however, offered me the results of an online survey that users had recently completed, and the Source offered me aggregated data from one of their surveys. Both allowed me to verify the result of my survey. A problem with both groups was that they were running surveys of their own and were afraid that users would either become confused as to the sponsorship of the surveys or tire of answering surveys and not bother to answer the "official" one.

Methodological footnote concerning online questionnaires

My survey on the Source consisted of ten questions concerning user background and activity on the Source (see Appendix B for a copy of the survey). Since online surveying is a relatively new process, the only way that I could offer the survey was to type the questions into a private file of my own on the Source, and then drop the level of protection that normally surrounds a private file. In other words, under normal circumstances, only I would be able to access that section of the memory of the Source's computer, but by dropping my password protection, I made it possible for other users to read the file.

The second step was to make others aware of the availability of the file by advertising it on the POST section of the database, which offers a "bulletin board" covering several categories. I advertised the presence of the survey by announcing it on a variety of categories, particularly those that Nancy Beckman, my contact at the Source, indicated were widely used. Therefore, readers of the "miscellaneous" category were likely to run across it, as were those who read "gripes," "dating," "chatter," or "students-corner." I changed the ads every week or so, in order to keep them current and to boost the ads back to a prominent position in the category.

I put the survey online just before the Christmas

holidays of 1981, hoping to catch a large number of users who were taking advantage of the Source's discount holiday rates, those who utilized the time off from work to "play" with their computers, and new subscribers who had received a Source subscription as a Christmas gift. Most of the people who answered the survey did so within ten days of its arrival online.

People who read my advertisements on POST had to access the survey file by typing in a series of letters and numbers (including my ID number and the name of the file, "SURVEY") which were included in the advertisement. After reading the file, they had to note down either the questions or their answers to them by some means (probably pencil-and-paper), and return to the computer. Then they had to type their answers into an electronic letter and send it to me.

This arrangement is distinctly convoluted. Not only did respondents have to go through a series of steps to participate in the survey, but they got no real rewards for doing so, other than a sense of helping the researcher and the promise of receiving a copy of the results. The Source declined to make alternate arrangements for distributing the survey, such as making a system-wide announcement so that when users logged onto the computer they would see an advertisement for my survey. This, Beckman claimed, was because the Source didn't want to confuse subscribers when they ran their own survey in the near future. Often,

arrangements are made for market research on the system where the researcher pays for the time that the subscriber is filling out a questionnaire, but since I had a free account that policy wouldn't work. Finally, there was no way to make the survey interactive, so that users could answer questions as they read them. One or two users offered to sell me programs that would allow me to do that, but the price of several hundred dollars was prohibitive. Further, while the understanding of the Source needed to complete the survey was relatively minimal, the number of steps involved may have scared some new users or bored others. Thus, those who did respond represent a biased sample.

With all those barriers to conducting a survey, it's not surprising that the response was limited to 40 people. Even so, the results proved to be informative. Despite its limited contribution to the research at hand, it provides an interesting methodological footnote to the process of conducting research via computer. First, it provides interesting commentary on the role of the respondent.

All those who did answer the survey included some comment when they returned their responses. A few merely prefaced their answers with something like HERE ARE MY ANSWERS TO YOUR SURVEY, but others included lengthy messages, ideas to improve the research, methodological and statistical pointers, and invitations to contact them

via electronic mail or online CHAT to discuss the matter further. Comments ranged from AS A COMMENT, I MIGHT ADD THAT I RARELY CHAT, BECAUSE OF THE RELATIVE SLOWNESS OF THIS MODE, BUT HOOKED UP WITH A BRIGHT 9 YEAR OLD KID DURING THIS PAST WEEK AND SPENT ABOUT A HALF HOUR -- AND LEARNED A LOT to YOU'RE GOING TO BASE A DOCTORAL DISSERTATION ON THIS? HMMM..... Users could also clarify anything in their answers that didn't seem to fit the categories I offered. One person answered a question asking him to categorize the types of electronic mail he typically sends by explaining his situation in detail, and then finally breaking his response down into percentages under protest. No one participated as simply a passive object of research; each respondent actively contributed something unique.

Second, online surveys must be short and interesting in order to be filled out. People who use computers in their spare time do so for the fun of it, and aren't going to participate in something that bores them. Along the same lines, the survey should be easy to complete (i.e., interactive) and some arrangement should be made to turn off the billing function while subscribers are filling out the questionnaire.

Subscribers should receive some benefit for filling out a questionnaire. Many users of services like the Source consider themselves pioneers of the computer age and will participate in surveys just to help spread an

understanding about one of their favorite hobbies. As computer use spreads, however, this will cease to be a primary motivation for people. A simple financial arrangement, such as disconnecting billing during the survey, or other credit should be implemented.

Of course, respondents should receive feedback on the results of the survey. The respondents of this questionnaire were sent electronic mail detailing the results of the survey in an easy-to-understand form. Several wrote back to discuss my comments in greater detail and offer me additional insights about the process of communicating via the Source. In addition, I compiled a detailed report for the management of the Source.

Vernacular Groups and Quantitative Methodology

Despite the difficulties of the Source survey, I still wanted to gather some sort of quantitative measure concerning the users and uses of the vernacular systems. I wrote to each group suggesting that I study them through observation and interviews, and asked if I might run a survey as well.

Although the response from each group was polite, they all seemed hesitant to be studied. This surprised me, as I had expected the greater resistance from the mass systems. Instead, the mass-oriented groups eagerly

accepted my proposals to study them, and the vernacular groups hesitated.

For example, Efrem Lipkin responded to my initial request by stating that he was glad I considered Community Memory a significant model for vernacular computing, but seemed reluctant to be included in the study. The Berkeley show system is not representative, he hedged, pointing out the group's current emphasis on long-term program development and acquisition of funding. When I wrote back indicating that I appreciated his reservations and that Community Memory's experience with funding difficulties was part of my interest, he reiterated his invitation to drop by and talk with people. However, he qualified his statement by adding "What we can do to aid your researches will depend very much on who you are and when you materialize in our universes" (Lipkin, 1982).

The Office for Open Network also seemed hesitant, and provided an explicit reason for their concern. In a 1982 letter, Pat Wagner wrote:

As to your third request (the survey), we must emphasize we are not a club, but a service. Many of our users would be highly offended by a demographic study. Our guiding principles are to be useful and not be boring. There are users who have expressed their willingness to be interviewed about their use of the network and we have gladly sent newspaper people and researchers to them. But the privacy of an account with the Office for Open Network is one of the attractions, and we can not violate our users' trust in us.

Clearly, the operators of the vernacular networks

view sociological research as being in the province of an "establishment" orientation and hesitate to subject their groups to what they perceive as a dehumanizing methodology. When I wrote back explaining my plans in further detail, and backed down about the questionnaire, everyone became very cooperative.

In summary, then, the six groups were studied through a mixture of methods: participant observation, observation, interviews, a questionnaire, analysis of questionnaire data provided by the system operators, qualitative content analysis of database messages and of publicity material, ongoing correspondence with the system operators, and unobtrusive measures on the setting of the organization.

By utilizing the strengths of each individual method, I attempt to paint an overall picture of the electronic communities that emerge on each of the systems. Clearly, these rough outlines can now be filled in with more details. Future research concentrating on specific aspects of these electronic communities can rely more heavily on one or two methods that allow intensive investigation of particular questions. The territory has been opened; now it may be settled.

APPENDIX B
SOURCE SURVEY

Hello. This is a survey about the kinds of messages that Source users send via computer. I'm doing this as part of my doctoral dissertation research. Naturally, all responses will be anonymous, and I'll be glad to send you the results when my research is completed.

You'll have to return to your own file to fill in your answers and then send it to my mailbox (local jargon for Source-mail), TCB010. (It's not necessary to retype the questions, by the way.)

I'm especially interested in any comments you have about the Source, and about computers in general.

Thanks for helping,

Terri Toles

- (1) What is your age? Sex? Occupation?
- (2) Would you say that you live in a city, suburb, town, or rural area?
- (3) What state do you live in?
- (4) For how many months have you subscribed to the Source?
- (5) In the past week, how many hours did you use the Source?
- (6) Of those hours, about what percent did you spend
 - (a) accessing databases
 - (b) playing games
 - (c) reading electronic bulletin boards
 - (d) using electronic mail
 - (e) "chatting"
 - (f) other (what?)

- (7) What percent of the electronic mail messages that you send involve
- (a) business/professional information
 - (b) personal information
 - (c) purely sociable communication
- (8) What percent of the people you send electronic mail to did you meet through the Source? What percent did you meet elsewhere?
- (9) What percentage of your daily communications involve
- (a) computers/electronic mail
 - (b) traditional mail
 - (c) telephone
 - (d) in-person
 - (e) other (what?)
- (10) Where is the terminal that you are currently using located? How many people are with you at this moment?

Thank you for taking the time to fill out the survey. Please send it, and any comments, to me at TCB010.

Terri

APPENDIX C

DIRECTIONS FOR FUTURE RESEARCH

As computers move farther into our culture, the arenas they provide for human interaction grow ever larger. Computers shape the communications environment, and thus have the potential to restructure the very foundations of our culture.

The exploratory nature of this research can only suggest the complexities of the electronic communities that can emerge from human interactions that take place via computers. The material included here represents a fraction of the possible avenues this research might have explored.

Still, the three approaches that inform this work function as threads that, when woven together, form a pattern that depicts the broad outlines of the world of communication that is mediated by computers. That world is shaped not only by the individuals who utilize computers to communicate, but by the technology itself and by the cultural values and sociopolitical context within which the technology is located. This three-dimensional matrix, consisting of individual interactions, boundaries set by the technology, and the sociocultural context that surrounds communication, provides a means

of understanding the ways in which computer-mediated communication fits into the present communications environment and the paths it opens for future developments. The combination of the three factors is fundamental to the preservation of democratic patterns of communication.

The possibilities for future research are vast. I suggest several alternatives, which fall generally into the categories of the three threads that form the core of this work. One set of explorations might examine in greater depth the microsocial character of the interactions that take place during computerized communication. The ways that individuals utilize the technology to communicate with one another: their presentation of self through paralinguistic cues and other stylistic behaviors, the content of messages themselves, the patterns of communication that take place, and the influence of user demographics--all are worthy of consideration in greater depth.

Another avenue to be explored is that of the computer as a technology. The various applications of computer technology (as an aid in psychoanalysis or to open new doors for the handicapped, for example), the new emphasis on computer literacy as a fundamental educational skill, and the social context of computer use are all important in the formation of electronic community. These might offer further insights when examined in

greater detail. Particularly interesting in this light are the other vernacular uses of communications technology that have emerged in recent years.

Finally, I consider the ways in which public policy might be structured in order to enhance the possibilities for democratic communication. The role that computerized communication plays in an information society requires responsible legislation and formation of sound policies to guide the development of the technology. Issues such as access to information, privacy, the political potentials of electronic polling and telecommunications, and freedom of information must be considered. Planning for the future can help stem the growing pollution of the information environment.

Electronic Presentations of Self

The ways that individuals use the computer to communicate with one another provide a framework for understanding other types of communication. The presentation of self through the computer is guided by the limitations of computer technology, and therefore offers an alternate means of studying face-to-face communication or interactions that are mediated in other ways.

The ways that individuals delineate their personalities and protect their electronic "turf" through the use of paralinguistic cues may offer a commentary on the ways

that this occurs in the course of other types of conversations. The anonymity provided by computer communication breaks down traditional patterns of conversation. Women, for example, may participate more actively in computer conferences than they do in in-person encounters. The barriers that often emerge in mixed-sex interactions may be dissolved at least partially by the intervention of the computer. The determination of the influence of gender on conversational modes could be enhanced by experiments that probe the ways that computer users express their gender to others. For example, when a person with an ambiguous name such as Chris or Terry uses the computer, does that person make it a point to clarify the appropriate gender? Do others ask?

Along the same lines, does the current gender gap in computer use alter the patterns of conversation that take place? Since computer users today are approximately 95% male, do the patterns of conversation that appear on the mass and vernacular systems reflect a peculiarly male phenomenon? Would the use of paralinguistic features change if the networks were dominated by groups of suburban homemakers?

The gender gap may also account for the use of typewriter graphics as a means for expert users to express their personalities in greater detail. The arrangement of letters, numbers, and other keyboard symbols on the computer screen requires that the artist command a good

deal of spatial ability and abstract mathematical thought. Not only must the creator be able to visualize the final pattern and build it by maneuvering the cursor around the screen, but in some cases the artist must construct a complex computer program to achieve the desired results. The relation of such use of graphics to the current controversies concerning differences in brain functions between men and women raises interesting questions about the process of socialization into electronic communities. If the process of presenting oneself as an expert reflects thought processes that are primarily male, what techniques do women utilize to present themselves as experts?

Naturally, the content of the messages exchanged also provides an interesting forum for research. Although this matter has been considered to some extent here, more detailed analysis of the subject matter of messages, continuity of thoughts among groups of messages, and stylistic spillover from one message to another would certainly be appropriate.

The interactions in the fictional communities would be particularly interesting in this regard. The resemblance of these communities to popular fantasy role-playing games such as "Dungeons and Dragons" and to science fiction novels offers many avenues for further research. The content of the messages could be analyzed in order to understand the myths and metaphors that

are present, and the use of metaphors from other media could be explored as well. Connections between these fictional communities and participants' other leisure activities might also be uncovered. Do members play fantasy games? Are they members of other groups that engage in fictional encounters, such as the Society for Creative Anachronism, a group that recreates medieval society? In what other fields do they exhibit creativity?

The ways that participants in computerized communication utilize other means of communication would also provide insights into the role of the computer as a technical mediator of human interaction. Do people who use electronic mail also write a lot of letters? Does one's style of writing change across technologies? For example, I often find that the tone of my writing becomes more informal when I write using a computer instead of the printed page. Does the anonymity of computer communication enhance the cordiality of communication?

Patterns of conversation differ according to the type of computer program into which the conversation is fitted. Electronic mail missives differ considerably from conversations via online real-time programs such as TALK or CHAT. Bulletin board messages offer a different forum than editorials in Special Interest Groups or electronic magazines. Discovering the patterns that such conversations follow could be important not only for the theoretical understanding that such research would

provide, but also because of the implications that such a discovery could have on various interactions. Management and clerical staff could communicate in ways that prove mutually beneficial if they were sensitive to the ways that individuals present themselves via computer and the limitations of certain computer programs. Since computers are used in many military settings, an understanding of the types of communication facilitated by certain types of computer programs could avert large-scale disaster.

The ways in which the demographic composition of the user group of a particular system influences the patterns of communication is also of interest. Not only are most people who use computers male, most are upwardly mobile, have some college education, and are technologically-oriented enough to purchase and use computer equipment. Many are computer professionals by trade; others simply enjoy computer use as a hobby. Might computer communication take on different forms if individuals representing other occupational groups were to dominate the networks? What differences would arise if individuals representing two different occupational groups--physicists and artists, for example--were put into communication with one another? What would the differences in their presentations of self involve?

Another factor may involve the age of users. Computers are particularly popular among younger age groups.

When these individuals communicate with their elders via computer, the traditional barriers that often appear during face-to-face interactions disappear. Often, there is a role reversal, with the younger partner in the interaction taking a dominant role due to her greater expertise in computer use.

What differences arise when individuals communicate within their age group and across age groups? After all, the senior citizens in ComputerTown/Menlo Park use their computers for different purposes than do the schoolchildren who frequent the library. What, if any, are the paralinguistic cues that alert participants to the age of others?

Geographic location of users may also provide an influence. Computer communication seems at present to be largely an urban phenomenon, but that may merely be due to the difficulty and expense of gaining access to computer databases from more remote locations. More interesting is the location of computer projects. While many towns have small-scale computer bulletin boards, the trend seems strongest on the East and West coasts. Of the vernacular systems examined here, for example, three were located in San Francisco and the fourth in Denver. Would the types of communication that appear differ if the projects had been located in Peoria, Dubuque, or Baton Rouge?

Cross-cultural analysis of communication via computer may provide interesting additions to the findings that

concentrate on the North American systems. The ways in which language influences communicative patterns, particularly paralinguistic cues, may shed light on the values of a culture. Might native speakers of different languages utilize different paralinguistic cues to express their personalities and emotions? How would bi- or multi-lingual individuals approach the situation? Could two people who speak different languages find a way to communicate by using computers?

These microsocial characteristics of communication often reveal much more than what appears on an obvious level. Not only do they reflect individual personalities, they can provide clues that allow us to decode our culture. As we move into an era where computers are growing in importance, these tiny components of communication may be the key that unlocks the potential of computer technology for human interaction.

Computer Technology and Social Change

Another piece in the puzzle of where computers fit into our culture involves their applications in everyday situations. Computer literacy is now considered a fundamental skill for schoolchildren, and the ability to use computer technology may in the not-so-distant future be a prerequisite for carrying out the basic functions of daily life.

Already, computers appear in many settings. They influence patterns of behavior directly in many instances, and indirectly in many more. While the role of the computer is apparent to the person purchasing airline tickets or using an automatic teller machine, computers are also instrumental in many hidden decision-making processes. City buses operate on schedules fixed with the aid of a computer. Many landlords subscribe to computer databases that indicate the financial reliability of potential tenants. Civil service and standardized educational tests are graded by computers.

Clearly, we need to examine the applications of computers in our society. The pattern of computer use may indicate something about the areas that are important to our culture. Computers are widely used to collate billing information, for example, and this use has been translated into popular culture with a simple template that reveals a great deal about how people view the machines. "Everyone knows" that if you need to alert a company of some problem with your bill, all you need to do is bend, fold, spindle, or mutilate the computer card that is enclosed. Since the card will then be unfit to be processed in the normal fashion, a human operator will have to take charge of your account, and your question, statement, or complaint has a better chance of being heard. Computers in this instance are

viewed as cold, impersonal devices that do not consider individual circumstances.

At the same time, however, other applications of computer technology provide positive benefits for users. Individuals who suffer from a variety of handicaps--speech, hearing, physical, mental, and a host of others--are now using computers to open lines of communication that had previously been closed to them. The use of computer technology in these settings may facilitate social change in the direction of more openness towards groups that had been traditionally disadvantaged in society.

Another application of computer technology has been as an aid to psychotherapy. Joseph Weizenbaum's ELIZA computer program, which simulated a Rogerian therapist in dialog with a patient, provides interesting commentary on the uses of computers in communication. Patients "talked" to ELIZA about their problems, revealing many details about themselves. By continuing research into paralinguistic cues as well as utilizing the manifest content of a patient's conversations with a program similar to ELIZA, a psychotherapist might discover the subtle cues that give meaning to a patient's comments.

Interestingly, however, when Weizenbaum introduced the ELIZA program, he was appalled at the reaction it received in the psychiatric community. He had intended the program to serve as a model only; he had no intentions

of utilizing ELIZA as a substitute for a human therapist. Professionals in the field, however, treated ELIZA as a means to lighten their case load. Obstreperous patients and other malcontents could be relegated to the computer. Eventually, computers would be able to diagnose and treat all patients. Weizenbaum was quick to point out that the human approach should never be abandoned.

Such situations provide natural laboratories for the examination of cultural values regarding technology, as well as indicating the priorities that influence our behaviors as members of a culture. When computers and word processors are introduced into the workplace, for example, it often appears that they provide for a greater degree of decentralization. Workers can work from their homes at hours of their choice. At the same time, however, supervision of an individual's work is relegated to the machine, so that workers may be evaluated by the number of keystrokes completed within a certain time period. Those whose work doesn't measure up to the pre-set standard may be reprimanded or worse. Research into the sociological implications of computer technology would do well to consider various applications of the technology and the reactions they have received.

The social setting of computers remains central to their use. The difference between public and private location of the terminal remains important: preliminary evidence indicates that users of public access teletext

terminals use the technology more when there is someone available to guide them in their use.

The analogy to the coffeehouses of Great Britain of the seventeenth and eighteenth century has been introduced previously. The coffeehouses functioned as public information networks not only because of their ties to the popular press but also because of the free, democratic atmosphere that permeated the coffeehouses at the time. Although there were class differences among the clientele, and although different types of individuals frequented different coffeehouses, there remained a connection among various coffeehouses.

Any attempt at providing computer access to a community should consider these historical precedents. The coffeehouses were multifunctional in purpose. They not only served as a place to gather information on many topics; they also provided office space, a place to meet friends or clients, warm drink and appetizing food, fireplaces that sheltered individuals from the elements, and a place to spend a few hours away from the demands of family or work. Groups engaging in practical research aimed at providing community access to computers might consider replicating the coffeehouse model by providing additional services to users. A storefront location might also include a small restaurant, music, shows of local art, space for interest groups to meet, performances of local musicians, and the like.

Of course, the coffeehouses began as something entirely different from what they were a hundred years after their heyday. In later years, coffeehouses came to be frequented by elite groups, and many turned into private clubs, thus abandoning their vernacular approach. The development of computer networks over time may provide insights into such a pattern of evolution. Since the vernacular groups studied here appear to be fading into the mainstream, it may prove enlightening to follow their development in order to examine the paths that such developments may follow.

The concept of vernacular communication in itself is worthy of more systematic study. The idea is not new: schoolchildren have practiced a vernacular of secret languages such as Pig Latin for many years, and folk art and popular culture are filled with examples of vernacular approaches to communication. All of these are certainly ripe for more detailed examination, but perhaps the most interesting aspect of vernacular communication involves the use of technology to aid communication in a vernacular vein.

Computer communication is only the latest in a series of vernacular-oriented technologically-enhanced communication techniques. Ham radio operators have for years filled the airwaves with Morse Code that provides a link across vast distances. A similar technique filled the

airwaves during the 1970s when CB radio suddenly found its way into popular culture. Thousands of Americans rushed out to buy receivers and learned the jargon of ten-codes so that they might participate.

Both ham radio and CB require certain degrees of technical sophistication of users. The expertise needed by "hams" far exceeds the knowledge necessary to operate a CB set, yet both technologies demand some specialized knowledge. Public access video, on the other hand, serves as an example of a vernacular communication technology that can be used without any expertise on the part of the individual. While it is possible to utilize video equipment by oneself, many cable television companies provide staff members to operate the equipment and orchestrate the performance, so that community members need only walk into a studio with a vague notion of a show they'd like to produce, and the staff will assist them in completing a production that meets their needs while reflecting professional production values.

The development and use of vernacular technologies for communication should be considered in much greater detail. Telephones, cameras, typewriters, copiers: all provide private citizens with the means to make strong statements about their culture. The ways that people use these technologies and how they facilitate social change should be examined more closely.

Democracy is a state of communication

The study of the ways in which individuals use computer technology and the social applications of computers is fundamental for understanding the role of computer technology in a democratic society. Democracy operates on a basis of free and open exchange of information, and depends on the actions of an informed citizenry to continue.

In order to uphold the fundamental ideals of a democracy in an information age, a society must appoint individuals who will guide the introduction of new technologies into the society in a manner that facilitates their use in a democratic fashion. Legislators and policy-makers must engage in informed debate and pass responsible legislation that will ensure a continued respect for the traditions of freedom of thought and speech that characterize democracy.

The entrance of computers into social activity on the large scale that is being achieved today raises questions of public policy that cannot be ignored. Particularly in a society that treats information as a primary resource, a coherent communications policy must be formulated.

One issue to be addressed is access to information. Democratic communication requires that all participants have access to information that influences them.

Access involves access to the technologies that enable individuals to receive information. Telephone companies provide "life-line service" that allows those customers who cannot afford full service (or do not wish to pay for it) an inexpensive means of receiving telephone calls and dialing out for a small fee. Public access video offers another way for special interest groups to disseminate their point of view to the community.

Public libraries have traditionally offered a means by which members of the public might gain access to a broad range of information resources. Today, libraries provide more than information printed in books and periodicals: many libraries include audio-visual materials such as cassettes, phonograph records, and filmstrips in their circulating collections. Some even loan cameras and computers to their patrons. Research into the role of the library in a highly-technological information society would certainly be appropriate.

Mere access to technology is not enough, however; people must know how to utilize the tools that are available. While many individuals are taking short courses in computer programming in order to discover the thought processes that computers require, many others cannot afford such courses. Those who reside on the underside of the information gap cannot take full advantage of the access provided by libraries or other organizations. Research into the needs of these groups

could address questions concerning the types of information needed by various sectors of society, the most effective means of distributing that information, and what networks for communication can be utilized. One suggestion that has been raised that information stamps be introduced. These would resemble contemporary food stamps in that they would provide financial assistance to those individuals who cannot afford to purchase the information necessary to conduct their lives.

The counterpart to access is privacy, the right of individuals, groups, or institutions to determine for themselves when, how, and to what extent information about themselves is communicated to others. The use of computers raises serious questions concerning the protection of personal privacy. Privacy may be invaded through intrusion, where electronic security devices record patterns of behavior or communication; interception, where private communication is "wiretapped;" or misuse of information, where information gathered for a legitimate purpose is sold and used for other purposes. Another potential threat to privacy involves the aggregation of data. Isolated pieces of information may have little intrinsic value, but when compiled, compared and aggregated, they take on new significance. Indeed, a dossier-like file on an individual might well be generated through this technique.

For example, supermarket checkouts that utilize laser scanning of computerized product codes already print out not only the price of the product, but the manufacturer and brand name of each item. These systems have the capability to record an individual's checking account or credit card number as well, and store this information in memory. In the instance that such data is retrieved, the privacy of the consumer can be violated. While discovery of one's penchant for tacky novels or magazines could be merely embarrassing, the disclosure of other information could have more serious consequences. A landlord who does not allow pets might monitor the purchases of her tenants in order to discover whether any of them habitually buy pet supplies of any type. Situations where the implications are more serious can be readily imagined.

Clearly, one direction for future research would be an examination of the ways in which privacy of the individual might be protected during computerized communication. The communication activities of a member of an electronic community should be protected from disclosure. Ways that the security of information might be maintained should be examined.

The right to privacy does not extend to all institutions, however. In a democratic society, the government must maintain a reasonable degree of openness to the citizens of the nation. While there is a tradeoff between

the free flow of information and the requirements for national security, research into the need for government limitation of information is needed. Recent federal decisions have limited the availability of information under the Freedom of Information Act, monitored basic scientific publications in technical fields in order to stem the alleged leakage of technology to potential enemies, and subjected federal employees to lie detector tests in order to verify their statements. Research into freedom of information could suggest the categories of information that provide potential threats to national security, offer democratic alternatives to secrecy, and provide remedies in the event that citizens feel that they are unfairly being denied access to government information.

One suggestion for enhancing democratic communication has utilized the concept of instant electronic polling to provide a means for holding referenda on a variety of issues of social importance. This scenario depicts citizens as registering their opinions regularly, and using computer technology to make democracy more participatory in nature. Critics of this model object, stating that such a procedure makes a mockery of the democratic process by allowing uninformed and changeable public opinion to take too central a position. Research could examine these arguments and the others surrounding the issue in an effort to determine the dynamics of such

a system and the ways in which the use of computer technology could contribute to the democratic process as well as those that would be anathema to it.

The real issue that underlies any discussion of the role of communication and computer technology in a democratic society concerns the world we are building for our future. The decisions we make today concerning the use of computers shape the communications environment that will guide the ways of thinking for the generations that will follow. Electronic communities can become part of a mindless pushbutton panorama or arenas for meaningful social interaction. The direction that future developments take depends on the dreams and values that we choose to embody in today's technology.

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