

**COMMUNITY NETWORKS:
BUILDING REAL COMMUNITIES IN A VIRTUAL SPACE?**

by

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Community Networks: Building Real Communities In A Virtual Space?

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ABSTRACT.

This thesis examines a number of community computer networks in British Columbia, Canada, focusing on questions of human community. Particular attention is given to the nature and character of the place-based communities that these networks are claimed to embody and promote, and the ways in which the networks are said to build and enrich local community.

Community networks are a form of computer-mediated communications (CMC) that emphasize serving local and geographically-defined communities, rather than purely non-spatial communities of common interest. Community networks are thus compared to and contrasted with the virtual communities of interest said to be present on many CMC systems.

Interviews were conducted with volunteers from several British Columbian community networks, including Vancouver, Victoria, Campbell River, Nanaimo, Parksville/Qualicum Beach, Prince George and Vanderhoof. Generally, respondents did not consider the building of local community to be a priority of their organizations, although they did recognize it as being one of the general objectives of the community network movement.

The thesis concludes that there is a gap between the views of many community network advocates, who frequently hold the building of local community as a primary goal, and the volunteers with the systems surveyed, who generally focused on the building of public space on the information infrastructure as their primary goal. Some of the significant barriers – economic, political and internal – to achieving this goal are also examined.

For my parents.

The dilemma of the critic has always been that if he knows enough to speak with authority, he knows too much to speak with detachment.

Raymond Chandler, *A Qualified Farewell*.

...nerds run the world!

Douglas Coupland, *Microserfs*.

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Online Address.

The complete text of this thesis is available on the World Wide Web.

<URL: <http://www.tela.bc.ca/tela/ma-thesis/>>

or

<URL: <http://www.vcn.bc.ca/people/nkg/ma-thesis/>>

Please include the URLs when citing this thesis.

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Chapter One — Introduction

1.0 Introduction and Rationale.

The most rapid developments in human technology have taken place in the 20th century, and with these changes have come wide social transformations. Two of these transformations are quite paradoxical.

On the one hand great changes have occurred in the social fabric of traditional communities this century; changes that have served to divide and isolate people socially. Former agricultural population bases have shifted to urban and suburban settings. This increased concentration of settlement patterns, combined with large in-migration and population growth, has led to the disintegration of many traditional communities. People are increasingly isolated and cut off from one another, even as population densities grow.

On the other hand electric, electronic and now computer-based communications systems have brought people together in unprecedented ways. It may be easier to find out what is happening in distant cities and countries than in one's own immediate neighbourhood. McLuhan's global village is becoming more of a reality every day.

Computer-mediated communications systems are a relatively new phenomenon, having been deployed widely in only the past decade. Yet they are already having a significant impact upon geographically defined human community.

1.1 Thesis Statement.

This exploratory thesis examines locally-based, owned and controlled computer-based communications networks – community networks – in terms of their potential ability to enrich community life; to help build local community. The focus is on selected organizations, primarily in British Columbia. Particular attention is paid to some of the factors helping and hindering the success of these organizations, especially as identified by individuals involved with those organizations.

The question examined, then, is in what ways and to what extent have community networks contributed to the goal of building local community?

1.2 Thesis Structure.

The first chapter briefly outlines the rationale for the study, the thesis statement, the structure of the work and definitions of key terms.

The second chapter constitutes a literature review of some basic concepts and definitions of human community, particularly as they apply to community networks.

The third chapter outlines the research methodology used in this thesis, and presents the formats of interviews with various key individuals involved with the organizations studied.

The fourth chapter of this thesis consists of an essential overview of the computer-mediated communications (CMC) technology used by most community networks. It also discusses how some of the characteristics of these networks differ

from other, particularly commercial, systems.

The fifth chapter consists of a historical review of the community networking movement, beginning with early efforts in the United States, but dealing largely with the Canadian experience in this area.

The sixth chapter consists of descriptions of the selected community networks that make up the primary research of this thesis. These are the Campbell River Community Network, the Mount Arrowsmith Community Network, the Nechako Network Access Organization, Nanaimo Online, the National Capital FreeNet, the Prince George Free-Net, the Vancouver CommunityNet and the Victoria Telecommunity Network.

The seventh chapter is a description and an analysis of the interviews with the key respondents. The chapter includes an assessment of the potential of the community networks to realize some of their stated goals.

The eighth chapter is an examination of some of the areas of concern faced by community networks. These include economic pressures, internal organizational issues and some fundamental questions concerning the underlying technology of CMC itself.

The ninth and final chapter concludes with a summary of the findings, namely that community networks do not realistically serve to build local community, but that they have the potential for serving as a form of online public expression.

1.3 Definitions.

1.3.1 Community Networks.

In brief, a community network, as described in this thesis, is a public computer-mediated communications (CMC) system designed to serve the general needs of a geographically-defined community of people. Systems of this kind operate under a variety of names—FreeNets, public access networks, community computing centres, civic networks, telecommunities and so on, (Morino, 1994. Schuler, 1995) but are referred to in this thesis simply as ‘community networks.’ The computer-mediated aspect of the concept is of great importance. In this thesis the term ‘community network’ does not refer to social connections between people, but to a certain type of computer-based communications system used for social interaction.

However, community networks are more than simple computer-based services. Owned and operated by non-profit organizations, community networks are driven by a general set of social goals, not strictly by technology or economics. One of the goals is the reinforcement of a sense of local community in today’s fractured social milieu, by providing an open forum for citizen communication. Implicit in this view is the assumption that the technology should be used for collective community purposes, not solely for the private pursuits of individuals. Other goals include education (computer literacy), promoting democratic ideals and ensuring that there will be some form of publicly owned resources, or a public voice, on the developing information infrastructure.

It is the first of these goals – reinforcement of a sense of local community – that will form the main emphasis of this thesis.

1.3.2 Computer-mediated communications (CMC).

CMC is a broadly defined concept that encompasses all forms of human communication that rely upon digital technology. It does not include more conventional forms of electronic media such as telephony and conventional video broadcasting. Telephony and video do rely on digital hardware but have not done so historically, nor do they necessarily feature digital equipment at all stages of the system, particularly at the user's end. CMC also implies, but does not always require, technology that can be used for individual (one to one) communications in addition to broadcast (one to many) purposes.

Popular synonyms for the kind of technical, social and mental space formed by CMC technology include 'the online world,' 'the Net,' 'the network' and, drawing upon the terminology of William Gibson's popular science-fiction novels, 'cyber-space.' (Gibson, 1984.)

The most common mode of operation for CMC follows the basic model developed in the 1960s with the advent of timesharing computers. This model is essentially that of a human operator using a centralized multiple-user computer upon which information is stored. The computer technology serves simultaneously as conduit, repository and display system for the largely text-based human communication.

1.3.3 Community networks as a form of CMC.

Community networks are one manifestation of modern CMC that represent a deliberate and conscious attempt to present an alternative to the almost entirely commercial and privately-owned systems currently in place and planned for the future. Although contemporary CMC technology was initially developed in academic research laboratories, most systems today are commercial in nature. From a technological point of view community networks are not dramatically different from their commercial counterparts, although they tend to be much less technically sophisticated for economic reasons. However, the purposes and social organizations that they represent are very different. These differences are discussed in detail in the next chapter.

It is important to note at this point that this thesis is largely concerned with non-profit and mainly volunteer-driven community networks. It does not deal with civic community networks owned and operated by a municipality primarily as a means of communicating with the citizenry. This is because such civic systems are generally part of the overall communications infrastructure used by municipal institutions rather than an agent for social change run by volunteer organizations, as community networks are.

1.3.4 Community building.

In this thesis 'community building' refers to promoting understanding and communication amongst people living within a physically-defined community. Traditional

social relations within physical communities have been radically altered since the development of the automobile and modern communications systems. The question of what forms of community building can help improve social relations in fractured communities is one of great importance to society today.

In the 1960s US activist Saul Alinsky recommended that the disadvantaged work together to fight entrenched power structures through abrasive activism. (Alinsky, 1971.) Community building thus tended to focus around establishing something of a common target against which a group of people would struggle. More recently John McKnight, also based in Chicago, has worked on establishing self-reliant communities by having people focus on what they have to offer others; their 'gifts.' As government cutbacks result in a waning influence of government services, this approach to enhancing localized community through internal self-reliance is becoming more popular with activists. (Cayley, 1994.) McKnight and John Kretzmann write: "It is increasingly futile to wait for significant help to arrive from outside the community. The hard truth is that development must start from within the community and, in most of our urban neighborhoods, there is no other choice." (Kretzmann and McKnight, 1993, p. 5.)

Community networks are promoted by many as being a valuable tool for helping to build this kind of community self-reliance by being both an accessible and affordable conduit for information and by being an open forum for citizen discussion. (Schuler, 1996.) Mario Morino describes community networking as "a process, facilitated by the tools of electronic communications and information, that improves

and magnifies human communication and interaction in a community.” (Morino, 1994.)

1.4 Community networks and Geography.

Community networks are inextricably tied with spatial concepts of geography. One highly vaunted aspect of modern CMC technology is that it is said to eliminate previously immutable barriers of time and space. Whether through such elaborate futuristic concepts as virtual reality – computer-generated simulated fantasy worlds – (Rheingold, 1991) or through more technologically feasible concerns related to the changing nature of perceived space in a world of instantaneous long-distance communications, CMC is held to challenge or even undermine humanity’s conventional notions of place and physical being.

This it does for at least two essential reasons. First, the existence of extremely rapid long-haul digital networks means that data can be transmitted halfway across the world in virtually the same amount of time required to transmit it across the hallway. In this context physical proximity is irrelevant. Proximity is defined by the number of hops to a router or microsecond transmission delays. Additionally, the network – at least in industrialized nations, where it is widely deployed – has a kind of organic ubiquity. John Perry Barlow describes these phenomena well when he writes:

Cyberspace, being a region of mind rather than geography, is simultaneously everywhere and nowhere. There are no national borders. The only boundaries

which are significant are those which one crosses by entering a password.) The location of those systems is irrelevant. What difference does it make that the actual whereabouts of a hard disk is, say, California, when one may as easily actuate its heads from a keyboard in Berlin as from the desk it sits on? The Internet is essentially one great machine (or, better, organism) all elements of which are continuous if wide-flung. (Barlow, 1994a.)

In a sense, Barlow's comment about the organic nature of cyberspace can be seen as echoing McLuhan's earlier theme that "It is a principal aspect of the electric age that it establishes a global network that has much of the character of our central nervous system." (McLuhan, 1964, p. 302.)

Second, CMC can be asynchronous in nature. Synchronous forms of communication, such as the telephone, require both the sender of a message and its recipient – or a proxy for the recipient such as an answering machine – to be available at the same time for the transmission to be effective. Asynchronous communications, such as email (electronic mail), permit messages to be sent to a remote host for recovery by the recipient at a later date or time. (Harasim 1993, p. 23.)

These revelations, although important, are not unique to CMC. Similar observations were made decades ago when telephone and, before that, telegraph technology became available. However the widespread adoption of CMC and the ease and rapidity with which digital information can be generated, packaged and distributed is unprecedented. CMC also holds the potential for relatively rich forms of information content, such as typeset text, images of photographic quality, audio and live video, to be disseminated with the ease of plain text.

This ability rapidly to transmit such varied kinds of information content, combined with the flexibility of CMC systems, is thus said to bring with it the potential for changes in social relations, what John Quarterman calls a “global Matrix of minds” (Harasim, 1991, p. 35) and what Lee Sproull and Sara Kiesler refer to as a “network community.” (Harasim, 1991, p. 107.)

But in contrast to this view of computer networks as involving disembodied consciousnesses projected into a non-physical virtual space, community networks focus largely on human communities defined by more traditional physical boundaries of space. The resultant conscious emphasis on place may thus represent an attempt to address some of the questions of human community that most implementations of CMC technology either ignore or claim to supersede. This occurs because proponents of community networks argue that community network systems be used as a tool – a means to an end – rather than a means in itself. And the end is frequently that of building local community. This seeming paradox of promoting the local using a medium that is said to destroy place represents an intriguing subject for study from a geographical standpoint.

1.5 Previous studies of CMC.

Although CMC often implies a deliberate undermining of the importance of place, little work in the field has come from a geographical perspective. There has, however, been much work done in other fields. Clearly the rapid and effective means of disseminating information embodied by CMC is likely to affect almost every aspect of

social interaction. There is therefore enormous potential for critical social study of such an important technological development.

1.5.1 Technophilic views of CMC.

The earliest studies of CMC tended to be of an unabashedly technophilic bent. From this viewpoint CMC's implicit emphasis on the absence of place is held to be both exciting and overwhelmingly beneficial. The field of CMC literature is crowded with enthusiastic panegyrics on the virtues of computer networking. Freed of the wearying and parochial shackles of geography, these advocates write, computer network users are able virtually to express their individualities in ways heretofore unimagined. The unbridled hope and enthusiasm expressed in some of this work can be overwhelming and a little embarrassing in retrospect.

. . . cyberspace, though born of a war technology, opens up a space for collective restoration, and for peace. As screens are dissolving, our future can only take on a luminous dimension! Welcome to the New World. (Stenger in Benedikt, 1991, p. 58.)

In another paper in the same anthology, "The Erotic Ontology of Cyberspace," Michael Heim combines a wide assortment of metaphysical theories with brief excerpts from William Gibson's popular science-fiction stories. The resultant uncritical blend – "Gibson highlights this essentially Gnostic aspect of cybertech culture . . ." (Heim in Benedikt, 1991, p. 75) – seemingly views Gibson's writing as almost infallible documents of great predictive power rather than works of speculative fiction.

Indeed, the boundaries between fiction and thoughtful discourse on CMC become rather blurred sometimes. William Mitchell, for example, yearns for a world in which people have become cybernetic human-machine hybrids wired into a global communications network.

We will all become mighty morphing cyborgs capable of reconfiguring ourselves by the minute . . . Think of yourself on some evening in the not-so-distant future, when wearable, fitted, and implanted electronic organs connected by bodynets are as commonplace as cotton; your intimate infrastructure connects you seamlessly to a planetful of bits, and you have software in your underwear. (Mitchell, 1995, p. 31.)

Sexual imagery aside, one is reminded of how visionaries in the 1950s confidently expected us to be making daytrips to Mars in our own private rockets by the turn of the century.

Even more sober papers written only five years ago now seem remarkably dated, in large part because of very rapid changes in the field. As science-fiction author Bruce Sterling notes in the afterword to the electronic (online) edition of his 1992 non-fiction book *The Hacker Crackdown*, "Three years in cyberspace is like thirty years anyplace real. It feels as if a generation has passed since I wrote this book." (Sterling, 1994.)

More grounded in contemporary technology, but still highly optimistic about the future of computer networks, is what could be called the cyberlibertarian viewpoint, symbolized by such popular cultural phenomena as *Wired* magazine. This glossy US periodical has, since its inception in 1993, paid particular attention to issues

of freedom of speech, privacy, government restrictions on cryptography and other related concerns that focus entirely on the rights of individuals on computer networks.

1.5.2 Technophobic views of CMC.

Not everyone is so convinced of the inherent values of CMC. A small contingent of critics has issued solemn warnings that CMC is essentially a dehumanizing technology; one that reduces the rich totality of human experience and social interaction to packets of coldly indifferent binary data. From this perspective the widescale adoption of CMC will lead to nothing less than an information dystopia; a case of massive societal illness resulting from an isolated and alienated citizenry locked away in individual electronic prisons. (Ellul, 1990. Roszak, 1986.)

Or, more ominously, CMC will provide the penultimate Benthamite panopticon; the best tool short of actual mind control for allowing a powerful technocratic élite to govern and direct society through total surveillance. In *Nineteen eighty-four* George Orwell presented a bleak cautionary tale of modern totalitarian society, complete with the ubiquitous monitoring of citizens via 'telescreens' mounted in every dwelling. "There was of course no way of knowing whether you were being watched at any given moment. How often, or on what system, the Thought Police plugged in on any individual wire was guesswork." (Orwell, 1949, p. 6.) When Orwell wrote those words electronic video was in its infancy (electromechanical video having largely failed) and such two-way telescreen technology was pure

conjecture but, as Mosco points out,

(the world of *Nineteen eighty-four*) is dystopia, a far cry from teleshopping or playing video games in Coral Gables, Florida. Nevertheless, the technology is the same. Orwell's screen is an advanced videotex device . . . Orwell's vision is the graphic expression of those who fear the use of videotex today . . .

(Mosco, 1982, p. 3.)

We know now that building a network of total video surveillance as massive as the one described in *Nineteen eighty-four* would be an extremely costly and cumbersome enterprise. But as CMC becomes increasingly integrated into our lives other technological concerns are becoming apparent. For example, it is reasonably feasible to implement the technology required to scan for selected keywords that appear in a network data stream, then filter and store them; thereby creating unprecedented opportunities for silent surveillance. This is particularly possible because, at present, most electronic communication is not encrypted or protected in any way. Philip Zimmerman, the author of PGP (Pretty Good Privacy), a popular semi-underground encryption program, writes:

More and more of our private communications are being routed through electronic channels. Electronic mail is gradually replacing conventional paper mail. E-mail messages are just too easy to intercept and scan for interesting keywords. This can be done easily, routinely, automatically, and undetectably on a grand scale. (Zimmerman, 1994.)

However, Orwell's vision of a futuristic totalitarian state failed to predict the power of modern electronic media, as governed by corporate imperatives. It is this

latter that Neil Postman describes when he writes that “Our Ministry of Culture is Huxleyan, not Orwellian.” (Postman, 1985, p. 141.) From this point of view – perhaps more cynical and cautious than strictly technophobic *per se* – there are many dangers associated with increased commercial control over our economic system and aspects of our private lives, especially when CMC technology is applied.

For instance in May of 1993 William Gibson and Bruce Sterling, known for their ‘cyberpunk’ science fiction novels and ironically hailed by many Net users as harbingers of a wired future, made an address at a technology and education conference in Washington, DC. Sterling offered this prediction in his speech:

Kids need places where they can talk to each other, talk back and forth naturally . . . Kids need a medium of their own. A medium that does not involve a determined attempt by cynical adult merchandisers to wrench the last nickel and quarter from their small vulnerable hands.

That would be a lovely scenario. I don’t really expect that, however. On the contrary; in the future I expect the commercial sector to target little children with their full enormous range of on-line demographic databases and privacy-shattering customer-service profiles. These people will be armed and ready and lavishly financed and there every day, peering at our children through a cyberspace one-way mirror. (Sterling and Gibson, 1993.)

In recent years much of the early euphoria generated by the sheer novelty of CMC technology has worn off; perhaps a combination of increased social acceptance of the technology and growing cynicism over the way in which it is being marketed and sold by large business interests. (Stoll, 1995.) In addition to this growing unwillingness to accept the breathless marketing hyperbole of CMC there appears also

to be something of a backlash growing against the libertarian views held by many of the new communications technology's proponents. For example in July of 1995 the American publication Newsweek published a front-page story on what it referred to as 'Cyberporn,' or the proliferation of sexually explicit material on the Internet. The article was largely based on little more than a single, widely-assailed, undergraduate research paper. (Rimm, 1995.)

Concerns over the availability of sexually explicit material have been taken quite seriously by many governments. The US government, for example, enacted in February of 1996 sweeping telecommunications legislation that included broad controls on what it referred to as 'indecent' material on the Internet. (Communications Decency Act, 1996.) At the time of writing this portion of the Act has been successfully challenged in court by free speech advocates on the grounds that it interferes with US First Amendment rights to freedom of speech.¹ (Sloviter, D., Dalzell, S. and Buckwalter, R., 1996.) The US government has, however, announced its intention to appeal the temporary injunction won by this challenge.

This type of legal action has not been restricted to the United States. In May of 1996 French police jailed two executives in charge of the largest French Internet companies, on the grounds that they were distributing pornographic material by failing to restrict the sexual content being carried on their networks. (Associated Press, 1996a.) Other countries, particularly those associated with authoritarian governments such as Singapore, China, Saudi Arabia and Iran, are also trying to

¹ — In US legal parlance, 'obscene' material is not protected by the law whereas merely 'indecent' material is.

tighten the restrictions on their citizens' access to the Internet. (Busse, 1996.) Singapore, for example, is trying to force its Internet service providers (ISPs) to prevent the distribution of, amongst other things, material that spreads "permissiveness or promiscuity" or that "depict(s) or propagate(s) sexual perversions such as homosexuality, lesbianism, and paedophilia." (Singapore Broadcasting Authority, 1996.)

1.5.3 Community networks as a potential middle ground.

There is thus an enormous gulf between such drastically different viewpoints as represented by supporters of electronic communications on the one hand and its critics on the other. Community networks can be seen as a useful field of analysis in this context, as they often embody aspects of both viewpoints.

Evidently many supporters of community networks have hopeful and optimistic visions of the technology. They see it as having tremendous positive social potential for promoting human communication. Civile *et al.*, offer this impressive list of benefits they see resulting from a civic-level networking of the US:

- Revitalizing local economies,
- Improving the delivery of government services, and reducing costs of government,
- Revitalizing civic institutions and public debate,
- Reducing poverty and changing welfare as we know it,
- Saving billions of health care dollars through prevention and early detection of disease and by streamlining health care administration,
- Bringing all of our children's education into the 21st century regardless of income,

- location or background,
- Reducing social costs of defense cutbacks, layoffs, and plant closings, and,
- Reducing costs of pollution, road maintenance and child care. (Civille, 1993.)

Yet even the most enthusiastic pæans to community networks are often tempered by the reminder that the current inequitable distribution of – and élite control over – the technology will lead to serious and negative societal repercussions.

In addition to a potential for social improvement, community networks frequently address questions of what Phil Agre calls a “communitarian” use of the technology, as opposed to the far more common “individualistic conception” of computer technology that is commonly assumed. In a speech at a BC Library Association conference in 1994 he noted that:

. . . computing is almost always, as a matter of necessity, something that people do as part of extended social networks. If all we see when we imagine computing is a person sitting alone in front of a terminal then we need to expand our vision and take an aerial view, asking the much larger and harder question of how communities take hold of computing and networking. (Agre, 1994.)

This thesis examines some of these tensions between the optimistic and pessimistic, individual and community, visions of CMC technology as seen by individuals working in the community network field.

1.6 Previous studies of community networks.

As noted above, little work has been done in this area despite the connection between human geography and the nature and goals of community networks. Three recent studies that examine community networks have dealt with questions of community development and urban planning, communications theory as it relates to government policy and public discourse in an online environment. Anne Beamish emphasized a largely descriptive survey of existing, primarily American, community networks, along with a brief history of the field. (Beamish, 1995.) Andrew Avis's focus was on the Canadian context, and included case studies of two Canadian community networks. Avis also concentrated on more evaluative issues surrounding the regulation of CMC technology. (Avis, 1995.) Most recently, Ann Travers analyzed online discourse in the public discussion area of Ottawa's National Capital FreeNet, focusing particularly on definitions of inclusivity in a public space from a feminist perspective. (Travers, 1996.)

The wider field of CMC itself has to date largely been the preserve of communications scholars and researchers interested in more sociological or psychological perspectives on the matter.

Communications scholars are often interested in the qualities CMC embodies as distinct from other communications technologies, often in a regulatory context. The increasing overlap in, or convergence of, previously disparate realms of electronic communications is also of particular interest. This type of research is sometimes seen in terms of large-scale trends of Western society, from agricultural to industrial to

information-based economies. (Harasim, 1991.)

Sociologists and psychologists are primarily interested in the ways the new technology affects social structure and human interaction. Much work has been done, for instance, on the ways in which CMC influences the organizational structures of companies or on the ways people interact over CMC versus other forms of communication. Sproull and Kiesler, for example, have written extensively about the ways in which extensive use of CMC alters traditional power structures in corporations. Their research has also examined some of the new social phenomena that arise out of CMC, such as 'flaming' (online insults) and the apparent levelling of organizational hierarchies. (Sproull and Kiesler, 1992.) Sherry Turkle, Elizabeth Reid and Amy Bruckman have paid particular attention to the ways in which people interact and present themselves in online gaming environments. (Turkle, 1996. Reid, 1994. Bruckman, 1993, 1996.)

Much of the work in geographical areas concerning communications has not addressed CMC itself. For example Stanley Brunn and Thomas Leinbach, in *Collapsing Space and Time*, (Brunn and Leinbach, 1991) edited a series of papers concerned with geographical analyses of telecommunications technology. These studies had a heavy emphasis on economic globalization and the altering modes of broadcast media. There are, for instance, discussions of the changing nature of capital flows in electronic systems (Brunn and Leinbach, 1991, p. 149.) and mass media development in South America. (Brunn and Leinbach, 1991. p. 278.) The book is, however, pre-Internet in nature. It does not examine the dramatic impact on one-to-one – as

opposed to one-to-many, or broadcast – communications afforded by computer-mediated communications.

In quantitative terms the most detailed studies of any community network were conducted by Andrew S. Patrick, Alex Black, and Thomas E. Whalen for Industry Canada, a Canadian government ministry. They have conducted three studies of the demographics and attitudes of NCF users. (Patrick, *et al.*, 1996a-c.)

In one study they surveyed approximately a thousand users of Ottawa's National Capital FreeNet in an attempt to get a sense of the basic demographics of the system and a rough measure of user satisfaction. Their 1995 paper, entitled *Rich, young, male, dissatisfied computer geeks? Demographics and satisfaction from the National Capital FreeNet*, is important reading for anyone involved in the field of community networks. In it they conclude that "The main finding of the current research is that the NCF users are not a specialized group in the community." (Patrick, *et al.*, 1995.)

1.6.1 The need for study and the nature of this thesis.

There is thus a great deal of opportunity to examine online communications from a geographical or spatial perspective. There are tremendous spatial repercussions to CMC technology and, science fiction fantasies aside, people do not live in virtual worlds. We live in a very real world, linked together by increasingly complex communications systems.

These systems are likely to have tremendous inertia as well. Just as decisions

made a century ago surrounding the nascent telephone infrastructure or the nation's highway system still have crucial consequences today, so too will today's decisions concerning CMC affect the future of human communications and thus society in general for decades to come. The institutional, political, social and technological momentum of these essential and ubiquitous technologies is extremely significant and long-lasting.

This thesis is thus important for several reasons. First, it constitutes the most detailed study of community networks in British Columbia yet undertaken. There are sixteen such networks currently in operation in the province, but the only studies of Canadian community networks to date have examined the National Capital FreeNet in Ottawa and the Chebucto Community Network in Halifax. This thesis examines community networking from a uniquely British Columbian viewpoint.

Second, this thesis considers community networks from a geographical perspective. It does so through an examination of the tensions between concepts of real (physical, place-based) and virtual (online) communities. The importance of the former in human social relations is understood by most people in an almost visceral sense, even as it is said to be under siege by contemporary settlement and migration patterns and by electronic media. However the latter is gaining a great deal of popularity as use of CMC increases. Additionally, some of the significant differences between large-scale urban community networks and small-scale rural community networks are examined. This is of particular importance because CMC technology itself is held to vanquish and render utterly irrelevant notions of space. Spatial

significance is examined in this thesis within the context of the community networks studied.

Third, this thesis takes a middle ground between the frequently polarized debate as to the nature of CMC technology. In a sense, this debate can be characterized by as one with technophiles on one side and technophobes on the other. The former are obsessed with the technology to the point that they do not recognize – or immediately discount the possibility of – inherent dangers in its widespread use. The latter are so suspicious of the new technological forms that they do not want to acknowledge potential societal benefits from their implementation. This thesis examines contemporary networking technology, with an eye both to the dangers and the benefits it may lend to society.

The next chapter begins with an overview of some of the background literature to a study of CMC in general and community networking technology as a form of CMC. It also includes a detailed examination of what is now known as ‘virtual community,’ or online social aggregations that are said to form on modern CMC systems.

Part I — Literature Review and Methodology.

Chapter Two — Literature Review.

2.0 Introduction.

This chapter begins with a brief survey of classic sociological definitions of human community. It then looks at how the term is often used today, and the development of the relatively recent idea of a virtual community. The place of community networks, as organizations which attempt to bridge these two definitions, is then examined.

2.1 Definitions of Community.

2.1.1 Classic definitions.

An important component of the fields of human geography and sociology is the concept of ‘community.’ Some excerpts from the Oxford English Dictionary provide some useful starting points.

Community:

I: As a quality or state.

1. the quality of appertaining to or being held by all in common; joint or

common ownership, tenure, liability, etc.

2. Common character; quality in common; commonness, agreement, identity.
3. Social intercourse; fellowship, communion.
4. Life in association with others; society. The social state.

II: A body of individuals.

7. A body of people organized into a political, municipal or social unity: a. A state or commonwealth. b. A body of men living in the same locality. c. often applied to those members of a civil community, who have certain circumstances of nativity, religion, or pursuit, common to them, but not shared by those among whom they live, as the British or Chinese community in a foreign city. d. The community: the people of a country (or district) as a whole, the general body to which all alike belong, the public.
8. A body of persons living together, and practising, more or less, community of goods. (Oxford English Dictionary, 1971.)

There are a number of common themes in these definitions. First, they seem to imply a certain degree of commonality between individuals. This can be extended to include understanding, trust, cohesiveness, group commitment, sharing, and conviviality between individuals. According to John Gould the “etymological roots obviously lie in the Latin *communicare*, (which) originally meant to share, to join and to unite.” (Brunn, Leinbach, 1991, p. 3.) Second, there is by implication a suggestion that physical, geographical, bounds are of some importance to the concept.

2.2.2 Ferdinand Tönnies.

Many modern studies of community can be traced back to Ferdinand Tönnies’

Gemeinschaft und Gesellschaft, usually translated as ‘Community and Society.’ (Tönnies, 1957.) In this sociological milestone, Tönnies proposed that social relations can be divided into two general categories—those of *Gemeinschaft* and those of *Gesellschaft*. The former is understood as encompassing the organic and the rural; the latter the mechanical and the urban. *Gemeinschaft* is related to strong, intimate and familial bonds, and is essential; *Gesellschaft* is related to weaker, rule-based and artificially constructed ties.

Although criticized today as being naïve or excessively dichotomous, Tönnies’ ideas have had a clear impact on the development of modern sociology. Durkheim, for example, in his studies of the division of labour in society, draws upon similar typological themes to produce his two societal types—organic and mechanical solidarity. (Durkheim, 1933.) His concept of ‘anomie,’ or normlessness, might also be seen as being related to Tönnies’ writings of the social transition from rural agrarian communities to urbanized, structured bureaucratic societies.

2.2.3 Modern conceptions of ‘community.’

The latter half of this century has seen massive and rapid changes in societal structures across Canada and around the world, and with these changes have come various redefinitions of community. The postwar period has seen particularly accelerated social change, and with this change has come a wide range of new social problems.

It is generally accepted that the average Canadian today lives in a far more

atomized and fractured world than his or her ancestors. The rapid development and deployment of new communications and transportation technologies, particularly the telephone, television and automobile, coupled with the rise of urban and then suburban settlement patterns make for a striking contrast with the largely agricultural nature of Canada in the previous century. Barlow, writing from a US perspective, comments that:

. . . the vast majority of (Americans today) live not in ranch houses but in more or less identical split-level 'ranch homes' in more or less identical suburban 'communities.' Generic. In my view, these are neither communities nor homes. I believe the combination of television and suburban population patterns is simply toxic to the soul. I see much evidence in contemporary America to support this view. (Barlow, 1995.)

Many have argued that these changes, and a commensurate focus on the creation of individualized private worlds and experiences has seriously undermined a traditional sense of community and belonging. A host of reasons is often cited for this change. People live in private dwellings separated from neighbours by large lawns or walls. They live and work in different parts of a city, commuting in individual private cars without any contact with others during the commute. At home, leisure activity is often focused on private activities such as viewing television rather than social and communal activities with neighbours and friends. People change residences with great frequency, causing social dislocation and often precluding any possibility of extended family relations on a regular basis. As Langdon Winner notes:

For modernism the prescribed frame for social relations was that of city and suburb. But today, for significant parts of society, attachment is no longer defined geographically at all. Many activities of work and leisure take place in global, electronic settings. The symbolic analysts of today's global webs of enterprise are shedding traditional loyalties, leaving everyone else to suffer in decaying cities . . . Such attitudes are found in 1990s cyberlibertarianism as represented, for example, in "Cyberspace and the American Dream" and in much of the hyperventilated prose of *Wired* magazine. These authors fiercely desire market freedom and unfettered self-expression with no sense of owing anything to geographically situated others. (Winner, 1995.)

Many critics have argued that this increased sense of detachment from social relations with others is one of the fundamental causes of today's serious social problems. Winner again:

Of course . . . breast-thumping individualism conceals many social conflicts. Many of those enthralled with globalization as the wellspring of economic vitality also bemoan "the weakened family", "collapse of community", and "chaos of the inner cities", failing to notice any connection. (Winner, 1995.)

Jan Fernback and Brad Thompson write that in the US, community, "our shared sense of collective self, fails to embrace the public and instead becomes enmeshed in the cult of personality." In this way community can be seen as moving away from *Gemeinschaft* definitions to *Gesellschaft* definitions, becoming a "private community." (Fernback and Thompson, 1995.)

2.2.4 Popular definitions of community.

Popular notions of community tend to fall into two general areas, somewhat analogous to Tönnies' two groups. The first is the use of the term 'community' in the context of physical locality. Community here refers to the collective networks of social relations between groups of individuals within a given geographical area, and this is the most common use of the unqualified term 'community' in common speech. In popular usage 'community' can be seen as being closely related to the term 'neighbourhood'—both refer to geographical areas of a size roughly comparable to mediæval towns, and both terms imply some degree of congenial relations amongst their inhabitants.

This use of 'community' could be said to be closely related to the ideal of *Gemeinschaft*, in that strong and close ties amongst a group of people in a fairly small area are implied. Certainly Tönnies felt that *Gemeinschaft* is, by its very nature, intimately connected with physical locality.

The *Gemeinschaft* of blood, denoting unity of being, is developed and differentiated into *Gemeinschaft* of locality, which is based on a common habitat. A further differentiation leads to the *Gemeinschaft* of mind, which implies only co-operation and co-ordinated action for a common goal . . . All three types of *Gemeinschaft* are closely interrelated in space as well as in time. (Tönnies, 1957, p. 42.)

It is debatable, however, whether this definition lends itself well to contemporary atomized suburban society.

The second popular use of 'community' involves the qualified use of the term to describe groups of individuals with a common cultural bond or interest. Thus one might speak of the 'academic community,' the 'black community,' the 'Sikh community.' Here the term does not implicitly rely upon conceptualizations of physical space but rather on notions of social space. A person is a member of such a community by virtue his or her social relations. They can also be described as a gathered community or a community of identity.

In this regard, 'community' could be said to be closer to *Gesellschaft*, in that relatively loose social ties are usually implied. Although this may not be the case in certain fairly strong social communities (such as the Jewish community or the Chinese-Canadian community), popular use of the term does seem to imply more casual and short-lived social interactions. This is particularly the case when the term 'community' is used to refer to groups of people coming together out of personal interests, such as hobbies, or professional groups.

2.3 Virtual communities.

The development of social and cultural patterns on online communications systems has brought with it the suggestion that another form of community, a 'virtual community,' has arisen. Virtual communities arise from an adaptation of the second popular definition of community above, communities of interest, to the world of online communications. (Rheingold, 1995.)

Here the term 'virtual' stems from the technical nomenclature and jargon of

computer programming. In computing terms, 'virtual' refers to an effective working replacement and does not necessarily have any implications of mere approximation, although it can imply 'substitute.'¹ The term is commonly used in the area of computer memory; 'virtual memory' being computer data stored temporarily on hard disk and not on faster but more costly computer chips.

Virtual community refers, then, to the social groupings of people that form on online systems. Such virtual communities are inevitably communities of interest and not of locale, brought together by diverse CMC tools, including mailing lists, Usenet newsgroups, online chat systems and so on. In 1978 Starr Roxanne Hiltz and Murray Turoff offered this telling prediction of what is now known as virtual community:

We will become the Network Nation, exchanging vast amounts of both information and social-emotional communications with colleagues, friends, and "strangers" who share similar interests . . . we will become a "global village . . ." (Hiltz and Turoff, 1993, p. xxv)

The term has been increasingly used in the media in recent years, particularly owing to the successful popularizing of the concept by Howard Rheingold in his book *The Virtual Community*.² He offers this definition:

Virtual communities are social aggregations that emerge from the Net when enough people carry on . . . public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace. (Rheingold , 1993, p. 5.)

² — Interestingly, the German translation for the title of this book is *Virtuelle Gemeinschaft*.

Rheingold bases much of the book on his own personal experience as a regular user of the WELL, an electronic conferencing system set up in 1985 in San Francisco's Bay Area by the publishers of the Whole Earth Catalog, a popular, populist and pragmatic catalogue of counter-culture tools and ideas that dates back to the Bay Area idealism of the late 1960s. The WELL is a relatively small multi-user system, with membership in the tens of thousands and not the millions. But according to both Rheingold and the WELL's own promotional literature it has developed a strong sense of online community and belonging amongst its users.

The concept has become extended to the Internet as well. An example of a loose-knit virtual community could be that of Ecto, an online community that has formed around an electronic Internet mailing list of the same name.³ Originally set up as a venue to discuss the works of American independent singer/songwriter Happy Rhodes and named after one of her albums, Ecto has since become a small but thriving virtual community of people around the world interested in a variety of 'ectophilic' music: music that generally features female vocals.

Although Ecto's chief focus remains its unusually friendly email list, 'real life' or face to face interaction is seen as an important part of its social cohesiveness. Ecto list members often hold small group gatherings, (in cities as far flung as Edinburgh, Vancouver and Wuppertal, Germany) attend live concerts together when possible and even circulate an 'Ectohostel' list. This latter lists the real life addresses of list members willing to host fellow 'Ectophiles' if they happen by and need somewhere

³ — <http://www.tela.bc.ca/ecto/>

to stay. Other aspects to Ecto include an irregular online IRC (Internet Relay Chat) channel for live conversations and an automated birthday list that notifies the group of list members' birthdays.

To an outsider such a virtual community may hardly seem as important as one grounded in the reality of everyday life. Yet many members of such online communities consider them an extremely important part of their daily social interaction. Ectophiles, for example, frequently report important life events to fellow list members—the birth of a child, the loss of a parent to cancer or an apartment flood, for example. The passing of one occasional list member, known to most only by his online nickname of 'Revvie,' inspired a series of touching online eulogies from friends and acquaintances around the world, none of whom had known him in person. On this topic Rheingold, quoting Barlow, comments that “you aren't a real community until you have a funeral.” (Rheingold 1991, p. 37.)

Do such social trends represent what Rheingold considers “the hunger for community that grows in the breasts of people around the world as more and more informal public spaces disappear from our real lives”? (Rheingold 1993, p. 6.) Or do they represent the precise opposite—an increasing reliance on artifice that is symptomatic of growing social isolation and alienation? Jacques Ellul, for example, objects strongly to the concept of virtual community. He argues:

. . . words are typically misused when there is said to be “community” between people who do not meet and who communicate only by teleconference with the help of computers. It is sheer bluff to talk about fellowship or community in such circumstances. It is audacious to say that

teleconferences are the same as clubs or societies or bistros or salons. We have here an inhuman outlook which can abstract from clubs, etc., all that is specific and simply retain the fact that one can communicate. There may well be conviviality in them, but there is also selection and the exclusion of those who do not keep the rules, as R. Klatzmann points out. Klatzmann is right to talk about "electronic nomads." These living contacts between people far removed can be more real and significant for many of them than the real communities in which they live, and they thus change into electronic nomads with no roots in a place or a human setting. (Ellul, 1990, p. 344.)

Perhaps virtual community represents something that falls between these divergent views. As Fernback and Thompson suggest, "It is one of the supreme ironies of the utopian view of CMC that it is likely to reduce that felt sense of community that it so nostalgically seems to uphold as virtuous. In its place will be a community of interest in which members will be able to drift in and out." (Fernback and Thompson, 1995.)

2.4 Entirely virtual communities.

An extreme example of social interactions in a virtual context might be the elaborate constructed fantasy worlds that have become popular on online systems, of the kind that Pavel Curtis calls a "network-accessible, multi-participant, user-extensible virtual reality whose user interface is entirely textual." (Curtis, 1992.) Known under a variety of odd acronyms, such as MUD, MUSH, MOO, MUSE and MUCK,⁴ in which the common

⁴ — Multi-User Domain or Dungeon, Multi-User Shared Hallucination, MUD Object-Oriented, and Multi-User Simulation or Simulated Environment. However nobody seems to know what MUCK stands for, if anything.

denominator is the letter 'M' for 'multi-user,' such environments are, in a sense, the computer-based extension of fantasy role-playing games of the 1980s. (Reid, 1994. Rheingold, 1995.) The names of these systems are sometimes abbreviated as 'MU*,' in which the asterisk is a 'wild card' that substitutes for any character.

In online MU*s users take on the roles of various characters and act out their online fantasies in incredibly elaborate textual virtual worlds. In these worlds social interactions are entirely mediated by the computer. Most systems are completely anonymous: there is no way of knowing who other people on the MU* may be in real life. Even users' email addresses are only known by the top-level users, who are generally called 'wizards.'

These systems can thus be seen at a number of different levels. At one level MU*s are purely escapist entertainment populated by Ellul's electronic nomads. But unlike other such forms of electronic entertainment, such as television, MU*s are highly interactive in nature and rely upon the creativity and energy of their users. Bruckman writes that according to Langdon Winner "social activity is an ongoing process of world-making.' In MUDs, this is true in a literal sense." (Bruckman, 1993.)

MU*s can also be seen as a kind of theatre in which the players and the audience are one. Frequently people invent fictional characters on their favourite MU*, and move these characters through the systems as though they were marionettes. Another analogy might be the fanciful masks worn by the participants of a masked ball. Virtual online soap operas of romance, intrigue and betrayal by various characters,

known as 'tinyplots,' are a staple of the more social MU*s.⁵ The terminology used on MU*s is theatrical and very revealing. The human being at the keyboard often refers to him or herself as the 'player,' and his or her virtual puppet as the 'character.'⁶ On some systems players even preface comments with 'IC,' for 'in-character,' or 'OOC,' for 'out-of-character,' to emphasize the difference when necessary.

Ironically, these games nearly universally attempt to construct a virtual geography of fantasy places—*islands, forests, distant planets*. Although entirely based in the placeless medium of cyberspace they usually rely on geographical metaphor, perhaps reflecting some basic need to tie even virtual experiences to some form of mental geography.

Many have written enthusiastically of such virtual worlds. They note that, for instance, socially isolated people can develop a greater sense of self-worth and self-identity in an online world. Physically disabled people for example, who might have great difficulty interacting with other people in real life (often referred to as 'IRL' on the MU*s) are offered exciting new opportunities for self-expression online. (Reid, 1994.) These systems can also be seen as tools for exploring the self, as a kind of personality simulation environment. They have even been held as tools for reconceptualizing our definitions of self. Turkle comments that online environments allow for "an extravagance of experimentation – with gender switching, age-flexibility, and all

⁵ — MUSHes, MUCKs and MOOs tend to be oriented towards online social relations; MUDs tend to be oriented towards traditional gaming – fighting fearsome software monsters and the like.

⁶ — Eg.: it is not uncommon to see something like "Grocible says 'oops gotta go—my player is late for work!'" on a MU*, as though the character were an independent entity controlled remotely by the player.

the rest made so easy – (and thus) experiences in cyberspace are challenging us to revisit the question of what we mean by identity.” (Brody, 1996.) MU*s are also a popular venue for amateur programmers and writers to express their interests, as they can create the elaborate software and write the textual descriptions that constitute these fantasy universes.

These virtual environments have moved beyond the realm of the hobbyist into well-funded academic research. A number of researchers have focused on the participatory environment-building inherent in most MU*s, and the potential this may hold for education technology. Pavel Curtis of Xerox PARC – Palo Alto Research Center – (Curtis, 1992) and Amy Bruckman of MIT’s Media Laboratory (Bruckman, 1993, 1996) are particularly well-known for their MU*-related work.

But others find the prospect of legions of individuals lost in their electronic online worlds very disturbing. It may seem strange to someone unfamiliar with the technology, but there is an addictive quality to the online world of MU*s, IRC and other forms of online entertainment. It is not uncommon for a person to log in, become engrossed in exploring virtual worlds or meeting virtual people and look up to find that hours have passed by. Alarmist articles concerning virtual widows and widowers are beginning to appear in the popular press. As one interview respondent for this thesis wryly remarked, “Marriages are made on the Internet . . . and marriages are lost on the Internet.”

Given this very real online phenomenon it is not hard to imagine dystopic science fiction scenarios which portray a world of disembodied people; pale atro-

phied bodies locked away in isolated cells; eschewing the real world in favour of fantasy creations delivered electronically. Clifford Stoll, known for his accessible accounts of computer security problems (Stoll, 1989) writes:

Much of what happens over the networks is a metaphor—we chat without speaking, smile without grinning, and hug without touching . . . How sad—to dwell in a metaphor without living the experience. The only sensations are a glowing screen, the touch of a keyboard, and the sound of an occasional bleep. All synthetic. (Stoll, 1995, pp. 43-44.)

But online users are quick to point out that although their imagined worlds are virtual they are also interactive, self-defined and self-built. The creative energy sublimated in the construction of elaborate MU*s, both in terms of programming and sheer imagination, is undeniable. This could be seen as marginally more constructive than the equally mesmerizing world of television, which has become an accepted part in our society. Unlike television viewers, who are essentially the passive recipients of pre-packaged commercial entertainment, online users frequently do make their own entertainment in many regards. Barlow suggests that online communications is “a major step past sitting there and watching another kind of glass tube which comes at you and offers no communication or connection whatsoever.” (Barlow, 1994b.)

2.5 The place of community networks.

Community networks can be seen as embodying some of the tensions between the

local and the global in this respect. Most community networks deliberately attempt to use placeless online systems to help build a local community defined by geography. Information focus is locally oriented. Most community nets, for instance, maintain directories of local community organizations. Sometimes these directories are simply static catalogues of phone numbers and addresses, and sometimes they are directories of entire Web pages for each group. Community networks also often restrict telnet (direct connection) access to other Internet sites, frequently allowing users to connect only to other community networks or systems run by local public or university libraries. They do this so that they are not seen as simply cheap access to the Internet, which users could then use as an inexpensive way to connect to games and other online facilities.

In the area of online participation, community networks generally reject the use of anonymous nicknames, or 'handles,' and require users to sign on by their real names. Most frown upon MU*s and do not permit such games-oriented activity on their systems,⁷ although some community networks do support online chat systems—local IRC or sometimes programs known as 'talkers' to complement email communications. They thus self-consciously reject the casting of their online systems as purely virtual worlds.

Many supporters of community networks also make the optimistic assertion that the networks can be used to bring fractured communities together. For example, Morino writes:

⁷ — One exception is Powell River's Community Network which, perhaps because of its BBS origins, has a few online games.

. . . we believe that the local community is where our toughest social problems – crime, inadequate education, underemployment – will be solved, by the grass-roots efforts of the people who have the most personal stake in their solution. It is here that community networking takes on such relevance in helping people solve problems and addressing the needs of their day-to-day lives. Clearly, community networking is an emerging phenomenon with the potential to effect profound societal transformation. (Morino, 1994.)

This view, that community networks should be used as a tool for helping to create a self-sustaining community, might be related to what McKnight calls “building (a) community’s capacity.” (Cayley, 1994.) This emphasis on promoting community self-reliance recognizes the tradition of Alinsky, but focuses more on positive efforts that help a community to regenerate itself. Alinsky, writing primarily in the 1960s, when local governments were generally rather better funded than they are now, advocated the vigorous demanding of action from those government agencies responsible. (Alinsky, 1971.)

On community self-reliance Telecommunities Canada’s Garth Graham comments,

I don’t have any doubts that the kind of connectivity (inherent in community networks) and the virtualization of a kind of community development process allows people to coalesce around issues. (The connectivity allows them) . . . to think about issues in different ways, to perceive things in different ways, to perceive more of things.

And that’s a sort of self-organizing principle. It’s not that they form some formal committee structure and that that formal committee structure defines a problem and then negotiates principles and action plans and strategies and stuff like that. It’s because the density of connectivity exists and things happen within it; people behave differently. They know more about what’s going on

and they know more about the possible consequences of what's going on. That changes their behaviour in relationship with each other. That's what changes the whole fabric and texture of community. (Garth Graham, personal communication, 1996.)

Chapter Three — Methodology.

3.0 Introduction.

The previous chapter outlined some of the previous research in the field of community networking. This chapter introduces the empirical research that was conducted for this thesis and presents the methodology used.

3.1 Methodology.

This thesis is exploratory in nature, and thus a qualitative research methodology was chosen. The basic goals of community networks are highly subjective. Community building, a notion of central importance to this thesis, is a personal and elusive concept that does not lend itself easily to numerical metrics. This thesis is concerned with the intentions and self-conscious directions embodied in each organization, as generally idealistic and ideological bases support the formation of most community networks. As Nicholas Jankowski comments,

. . . new communication and information technologies, such as interactive videotex services and computer conferencing, lend themselves to qualitative research. Access by the general public and the local community to these interactive media is an important component in a democratic vision of the so-called information society. Qualitative methodologies can help communities to understand not only how new communication technologies are being introduced at present, but also how the emancipatory potential of new media may serve community in the future. (Jankowski in Jensen and Jankowski, 1991, pp. 173-174.)

3.1.1 Interview Respondents.

Primary research for this thesis consisted of a series of detailed interviews, conducted with key informants. These respondents were generally long-time volunteers and, occasionally, staff with community networks across Canada. The majority of these networks were located in British Columbia.

Initial contacts were made over email for more remote community networks, and in person and telephone contacts in the case of Vancouver-based individuals. Interview respondents were thus largely chosen through an informal network of personal contacts that I have built up during my three-year involvement in the field of community networking. Many important initial contacts were made in person during the August 1995 Telecommunities Canada conference held in Victoria.

Respondents were chosen on a basis of their involvement with each network. Many, therefore, were founders, board members or presidents of their respective organizations. As most community networks are relatively small organizations these key respondents were generally involved in the day to day operations of each network and were very familiar with them.

Other respondents interviewed included long-time volunteers, who were not necessarily involved with their organization at the board level, and former volunteers. The former group were generally not involved with the setting of policy, but were simply getting out into the community and working with community organizations, and often offered a highly pragmatic view of their community network. The latter group were individuals who left their local community network for a variety of

reasons, but who were often dissatisfied with the work of the organization with which they were once involved. The frustrations and criticisms that many of them expressed were valuable in gaining insight to the problems and challenging organizational difficulties in building a community network.

3.1.2 Personal Experience.

In addition to interviews with respondents, a great deal of this thesis draws upon the experience that I have gained as a volunteer in the area. For the past three years I have been involved with the Vancouver CommunityNet, formerly the Vancouver Regional FreeNet, in a number of areas, including system design, public relations and software authoring. I have been a board member and Webmaster (technical coordinator responsible for organizing the system's Web-based material and writing a set of Web-related computer programs) of the system since September 1994.

My experience has therefore encompassed a wide range of activity in the CommunityNet. I have seen first-hand the social dynamics of the organization from the point of view of both a volunteer committee member and a member of the board, and have been able to follow the development of the organization over a significant period—from its early days before it even owned any computer hardware, to the present. I have also been able to come in contact with many individuals keenly interested in the field of community networking.

It should also be noted that this experience may have its disadvantages. I did not interview fellow volunteers in the organization as a dispassionate observer and

outsider, but as a colleague and participant. My position as a board member may also have affected interviews in a kind of socially Heisenbergian fashion. Nevertheless, I believe that the depth of insight I gained through my long association with the organization has been of great benefit in writing this thesis. In a sense, this thesis can be seen as something of a 'reflective' or descriptive account, which might be described by Jankowski as a work that "describe(s) developments and explore(s) policy options" rather than being one that focuses on theoretical concerns.

(Jankowski, 1991, p. 166.)

3.1.3 Interview Structure.

The purpose behind the interview questions was two-fold. First, because most of the individuals interviewed were directly responsible for guiding the ongoing policies and directions of each organization, the interviews were designed to have each respondent articulate those policies and directions. Second, many of the interviewees were closely involved with community outreach aspects of their organizations and so had great familiarity with the response of their community to the system with which they were involved.

The questions asked are listed in Appendix A. Interviews were largely conducted in person when possible, with the remainder being conducted by telephone. They were not conducted by email, because I was more interested in establishing a dialogue with respondents than corresponding. Email was used to set up initial contacts with respondents, however. Additionally, much supporting material for this

thesis came from email correspondence with other volunteers on other systems.

The interviews lasted from approximately half an hour to nearly three hours in length, with the average running for a little over an hour. A total of 19 individuals were interviewed.

Organization Name	Number of Respondents	Interview Method
Campbell River Community Network	3	In person
Mount Arrowsmith Community Network	3	In person
Nanaimo Online	2	In person
National Capital FreeNet	2	Telephone
Nechako Access Network Organization	1	Telephone
Prince George Free-Net	1	Telephone
Vancouver CommunityNet	6	In person
Victoria FreeNet	1	Telephone

Table 1 — Organizations Studied.

I made audio recordings of all of the interviews. Interview analysis consisted of listening to the tapes, extracting commonly-recurring themes and transcribing them.

Drafts of certain portions of this thesis were also emailed to respondents in order to solicit comments and corrections from them. This was also an attempt to draw respondents somewhat closer into the interview process, and cast them more as participants than subjects.

3.2 Interview Questions.

The opening questions of the interview served both as a form of introduction and also as a way to determine the personal background of each respondent. Respondents were asked to describe their current line of work, how they first heard about community networks and what motivated them to become involved.

Each respondent was then asked for a brief capsule history of the community network with which they were involved, if applicable, which formed the basis for the descriptions of the community networks in chapter six. These histories were, therefore, almost entirely derived from the interview process.

The interviewees were then asked to describe the main goals and purposes of their community network: both the stated official organizational goals and, at a more informal level, the goals they believe their organizations actually achieve. Respondents were then asked if they felt that the goals they listed were typical of their perception of the movement as a whole.

If a respondent identified building local community (or a generally analogous concept) at his or her own initiative then he or she was asked what priority this area was assigned within the organization. If he or she did not identify community building then he or she was asked if community building was an implicit goal in the work their organization performed. Respondents were then asked to provide examples of community-building on their system.

To close, respondents were asked about their visions for the future of community networking in general and their own community network as a specific case.

The following chapter examines the underlying technology of, and the general history of, community networking.

Part II — An Overview of Computer-Mediated Communications.

Chapter Four — Technical Background.

4.0 Introduction.

This chapter describes some of the technical systems that make up common CMC systems. Community nets are, by definition, largely based on the CMC technology that they employ. Therefore an understanding of the basic workings of such systems is critical to comprehension of the social goals and benefits that they are said to bestow. Additionally, community networks do not exist in isolation. They function in relation to a wide variety of other computer systems, both public and private.

This chapter thus compares community networks with other commercial and non-commercial information systems. Comparisons are made with bulletin board systems, commercial online systems and Internet service providers.

4.1 Basic technological paradigm.

Community nets follow the basic timesharing model devised by computer designers in the 1960s. The individual using the system, referred to as the 'user,' connects to the remote host computer with either a personal computer acting as a terminal or an

actual text-only video terminal.⁸ This computer or terminal is then used to dial in to the remote host over regular telephone lines using a modem; a device that converts the digital codes used by computers into audible analogue information that can be carried over regular voice telephone lines.⁹

This model is illustrated in the schematic below.¹⁰

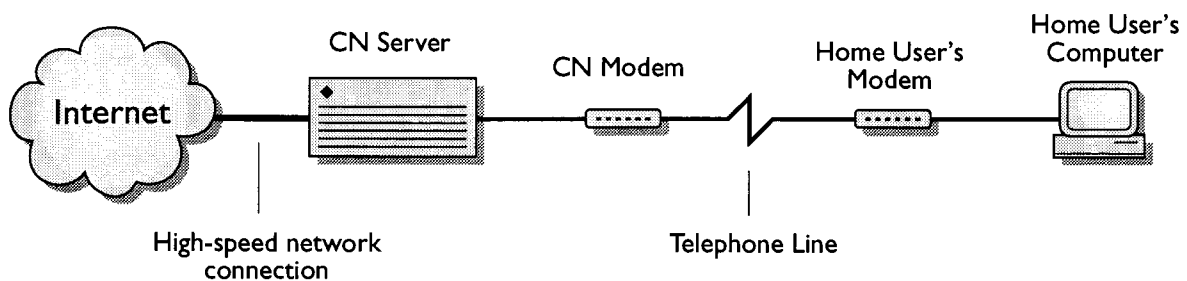


Figure I — Typical CMC Configuration.

Once connected to the remote host – the community network's server in the diagram above – the user can type text commands (instructions) into his or her keyboard. These commands are sent over the telephone line to the remote system,

⁸ — Actual terminals are becoming less and less common, except occasionally in institutions with a large installed base of the older technology, such as libraries. Most home users use personal computers rather than terminals.

⁹ — In some circumstances a user may establish a direct 'telnet' network connection to the host computer rather than using a modem. An example of such a circumstance might be a public access terminal at a public library. The library in this example is wired permanently to the Internet and thus modems are not necessary.

¹⁰ — The Internet is traditionally depicted as a cloud. This is because the Internet is a vast network of networks with no defined boundaries or borders.

which responds by displaying information as requested. The user can thus send and retrieve personal electronic mail (email), post public messages for other users to read, browse public information posted by other people, and so on. The user is generally on a single-user home computer, whereas the host computer to which he or she connects is a large system capable of supporting many users and connections simultaneously.

The past five years or so have seen an important change in the home computer marketplace. Graphical user interfaces featuring windows and mice, such as Apple's MacOS and Microsoft's Windows operating systems, have become the norm, superseding more traditional text-only paradigms. These systems use more pictographic representations of information. They have thus become popular because they insulate the user from the inner workings of the system far more successfully than older, and usually much more complicated, plain-text interfaces.

Nevertheless, graphical systems still rely on the same basic model of a client computer connected to a large centralized multiple-user host system over a dialup telephone line, although the burden of information processing for the purposes of presentation is shifted to the client. This emphasis on server-side processing is rapidly changing, with the popularity of client-side interpreted languages such as Java, JavaScript and ActiveX on the increase, but these developments fall outside the scope of this thesis.

This server-based approach, then, is in a crude sense the general model for today's computer-mediated communications systems. It may seem obvious to

habitues of the technology, but is worth repeating as the model embodies certain design assumptions, most particularly that of a centralized server coordinating the flow of information to a wide network of remote terminals. These terminals, even if they are standalone personal computers, are essentially operating as 'dumb' hardware that do not do any processing of information by themselves. This same general model is used by any organization that wants to make information available to a given audience using computer technology—whether that information is internal corporate news, popular material for mass-market consumption or local community information. It is this last category that is the focus of this thesis.

4.2 Common types of CMC systems.

How, if computer-mediated communications systems are in widespread general use, does a community network differ from other systems of information provision? Three commonly-used categories of CMC systems are corporate online services, Internet service providers and bulletin board systems.

4.2.1 Major corporate online services.

All operated out of the United States and owned by large corporations, the consumer-oriented online giants include such widely recognized brand names as America Online (AOL), CompuServe, the Microsoft Network (MSN) and, to a lesser extent, Prodigy. At the time of writing AOL was the largest of these services, with over six

million registered users.

These services emphasize both connection to the physical network and the provision of information content. The latter emphasize exclusive online services produced in conjunction with large mass-media companies such as Time-Warner or the various large American newspaper chains. Many of these online services are available only as extra-charge subscription services, over and above the normal connection fees. As noted above, these large networks are US-based,¹¹ and therefore their information content is correspondingly oriented towards American cultural, political and social interests, particularly at a national scale.

In addition to such mass media style content, the online giants also offer the usual array of electronic communications services such as private email and access to large libraries of freely available computer software.

It is important to note that historically most of these networks have relied upon carefully-guarded proprietary software programs and protocols to allow users to connect. In addition to being required to use this custom software to get online, users could not use one network's software with another network. Only recently have online services begun to rely upon modified Internet protocols based on public standards. As a result these online giants are tightly-controlled, centralized private information systems. In fact, in the early years it was often not possible to send email between competing networks except through cumbersome gateways. This reliance on proprietary technology is shifting rapidly as the Internet model gains dominance,

¹¹ — America Online seems to reinforce consciously this fact, for example, by naming its Canadian and European subsidiaries AOL Canada and AOL Europe respectively.

but whether based on proprietary or open technical standards, the online services will remain tightly controlled private systems.

This control extends to the services' content as well, even when user-created. In its early years Prodigy generated considerable controversy by employing teams of 'editors' who would censor messages that the company considered offensive. This became a particularly contentious issue when it became apparent that the company was also deleting messages critical of its editorial policies.

More recently AOL has installed filter software to block posts containing offensive or potentially offensive words. This software has also proved to be controversial. In particular, some women's groups and breast cancer organizations complained that postings made by their members were automatically censored by AOL, simply because they contained the word 'breast.' That such a word should be deemed offensive is naturally an affront to these organizations, and to many women. (Boston Globe, 1995.) Although AOL hastily changed its software to permit the use of the word 'breast' the issue raises important questions as to who determines what constitutes offensive content.¹²

Questions of corporate control extend far beyond censorship of allegedly offensive material, however. In July of 1996 AOL reversed a week-old policy to enforce the use of English in a forum on its system following a storm of protest from

¹² — As a humorous aside, the RISKS Digest notes that a user from the small English town of Scunthorpe was puzzled to find that AOL Europe's system kept rejecting the name of his town whenever he tried typing it in. It turned out that AOL's filtering software was rejecting the word 'scunthorpe' on the basis of a certain substring of text contained within it. The user was indignantly forced to spell his town's name 'Sconthorpe' before AOL's software would accept it. (Neumann, 1996.)

Spanish-speaking soccer fans. The fans were incensed that their posts were being removed by system administrators on the basis of language. (Associated Press, 1996b.)

4.2.2 Commercial Internet service providers.

The Internet, which had its origins as an academic and research network in the 1960s, is rapidly becoming the prime arena for online CMC, in large part because its technological base relies on relatively open and public standards developed by non-profit committees and industry consortia. As Carpenter comments, “Fortunately, nobody owns the Internet, there is no centralized control, and nobody can turn it off. Its evolution depends on rough consensus about technical proposals, and on running code.” (Carpenter, 1996.)

The Internet is thus still a fairly diverse market ranging from small garage operations running off a converted home computer and a handful of modems to very large networking companies controlling dialup pools in dozens of host cities. Although it was originally built and administered by government-funded research institutions, the Internet today is now run largely by private corporations.

Commercial Internet service providers (ISPs) usually do not focus on exclusive information content. Rather, they generally just provide physical access to the network through extensive modem dialup facilities. Outside organizations – from students running personal Web pages on university computers to large company sites run primarily as advertising or promotional ventures to corporate subscription-only

sites – are the providers of actual information content.

However, the ISP market is changing rapidly. Originally just a niche hobbyist market, the commercial Internet has seen explosive growth over the past two to three years. Future growth is likely to occur at the expense of the small startup operations, however, as the larger providers use their sizeable economic resources to expand into this market. It is probable that the current Canadian ISP marketplace of thousands of small cottage industry providers will be narrowed down to a handful of extremely large players, many owned by giant US telecommunications corporations, within the next few years. This consolidation of the marketplace will undoubtedly increase as secure encrypted protocols for exchanging credit information gain widespread acceptance, and the Internet becomes the precursor of a global ubiquitous information system as common as the telephone.

As a result of this commercial growth there is increasing overlap between the large corporate online services and the commercial ISPs. All of the giants now offer some form of Internet access, to varying degrees, through their systems. They are also developing ways in which their pay-per-view content delivery model can be implemented over the Internet.

On the whole, ISPs have been resistant to censorship issues. In large part this is because of the technical difficulties of controlling or blocking the sheer volume of content that passes through their systems. Except in cases of clear abuse (an individual using their system to attack other systems or target other users' mailboxes indiscriminately, for example) ISPs generally prefer to take the position that they are

common carriers, much like telephone systems. Common carriers are not responsible for the content that passes through their systems, unlike bookstores or magazines.

4.2.3 Bulletin Board Systems.

Finally, there is the small market of private bulletin board systems. (BBSS) These can range from a single home computer and phone line in an enthusiast's basement to large professional multi-line installations that approach commercial ISPs in scope. Private BBSS have been in existence since their earliest days of microcomputers, and tend to focus on small hobbyist and specialist interests.

Although there is a thriving underground community of BBS users and operators, the BBS world has never been able to attract significant mainstream attention, largely remaining the domain of the computer-user hobbyist. It is likely that the significance of BBSS will decrease as the Internet becomes more widely used and the bulletin boards become small outposts on the Internet. Generally, private BBSS are free for anyone to dial up and use, although the larger systems tend to operate on a subscription basis, levying fees for access.

Some BBS networks, such as Tom Jennings' intentionally anarchic FidoNet system of informal basement operations across the world, had interesting potential as grassroots information networks but were never able to attain large-scale mass appeal and move beyond the underground or hobbyist markets.

4.3 Community networks as distinct from commercial services.

Since most online information services larger than one or two phone lines are commercial in nature, it is useful to examine some of the ways in which community networks differ from commercial systems.

4.3.1 — i) Local.

Community networks are self-consciously local in terms of audience, ownership and content. 'Local' in this context is usually defined as being municipal or regional in nature. Since the community networks normally rely on regular telephone lines for their client connections, their catchment area is usually defined by the free telephone calling area within which their central server is located. They therefore implicitly end up inheriting the political, economic and social decisions that were made when that local dialling area was demarcated. This is an important point, as it means that the geographical limits to each community network are not, on the whole, defined by the network itself but by external factors.

Generally, community nets are operated by non-profit societies that rely largely on volunteer labour. These societies vary in structure, but frequently consist of a core volunteer board of directors, sometimes a small contingent of paid staff to maintain the system and coordinate volunteers, and a large and relatively informal pool of unpaid volunteers who carry out the bulk of the work.

Finally, in addition to being locally owned and controlled, community nets

include in their mandate the encouragement of local discussions and the participation of local community organizations. This is in sharp contrast to the majority of commercial services, which generally do not interest themselves in small-scale local concerns.

Only BBSS can be seen as operating at this particular level. Most commercial services do not focus on the provision of local content, and the larger companies generally are not locally owned except in the case of some major metropolises. This is likely to change in the future, however, as commercial enterprises exploit the local market niche, much as large media conglomerates have purchased most small local Canadian newspapers. In fact, many community network activists are concerned about the possibility that aggressively-marketed commercial services will undermine many aspects of community nets in the near future by selling and attempting to monopolize local content.

4.3.2 — ii) Universal Access.

Community networks strive to ensure that everyone in the community has an equal voice and an equal opportunity for participation on the system. Most offer dialup modem lines at no or minimum cost, so that users unable to pay the regular monthly fees charged by commercial online services can still afford access. Even community networks that levy fees offer some provisions for access by the disadvantaged.

Naturally, individuals in the community with low or no incomes usually cannot benefit from dialup lines, as the presence of such lines assumes that the user has

access to a personal computer and a telephone. Accordingly, an important feature of most community networks is the active provision of freely accessible computer terminals in public locations such as community centres and libraries.

Because most community networks are connected to the global Internet they are also accessible to those users with access to computer networks via commercial pay accounts, user accounts in the workplace or student accounts at school or a university.

This emphasis on access is an important difference from commercial services, most of which generate a majority of their income from charging users for access to the network. Commercial entities are also unlikely to be interested in providing free and thus non-revenue public access sites, except perhaps for the odd terminal as a promotional device.

BBSS are similar to community networks in this regard, but again most systems with more than just a couple of telephone lines involve access charges. A community hobbyist is likely to be able to support one or two telephone lines out of his or her own pocket while accepting occasional donations, but this funding model cannot be extended to large multi-line systems.

4.3.3 — iii) Community Outreach.

The essential aim of commercial systems is naturally the development of a profitable and growing user base. Their primary efforts are thus directed towards acquiring

users likely to generate income on their system; they are not in business to give services away for free. Nor are they likely to involve themselves in the extensive cross-subsidization process that telephone companies are required by law to do in order to ensure universal service. Additionally, the computer hardware required to access online services costs money, as do home telephone lines.

One critical consequence of these economic issues is that access to most information services today can be broken down fairly sharply on an income basis. In simple terms, the middle-class and wealthy can afford computer technology and thus CMC; the poor cannot. In a 1995 study of US Internet users O'Reilly & Associates found that slightly over half of their study group had a 1994 household income of between \$35,000 and \$75,000 per year. (US dollars) Only 5% of their survey group earned less than \$15,000 per year. (O'Reilly, 1995a)

There are other connections that can be made between income and access to communications technology. A 1994 study in Chicago reported by Charles Piller suggests that plans made by Ameritech, the local telephone company, to wire the city for advanced networks amount to "electronic redlining." In other words, Ameritech was intending to wire affluent communities for these new services, while bypassing low-income areas inhabited largely by racial minorities. This the company allegedly did for purely economic reasons – the installation of fibre optic technology and even full-duplex switched cable is a costly endeavour – but the results are potentially devastating for the economic, social and political prospects of the disadvantaged. (Piller, 1994.)

An increasing reliance on advertising sales may alter this balance somewhat if it proves successful as a revenue-generation model—network providers would increase advertising content in order to subsidize network provision costs. But unless advertising sales prove popular and sustainable, it is unlikely that this alone will eliminate end-user network access charges. Additionally, the prospect of a world saturated with even more advertising content than is already the case may be discomfiting for some.

Community networks, driven by community development goals, are not interested in encouraging just the wealthy alone to use their systems. In fact, many community nets make a strong effort to encourage the disadvantaged to sign up and become regular users. They often maintain community outreach programs in which volunteers go out and promote their system to the community on a small-group basis. Many attempt to sponsor public access sites, frequently through local public libraries, so that users without home computers or home telephone lines can still get connected.

Implicit in this goal of encouraging the disadvantaged is the view that access to computer-mediated communications is itself beneficial or, at the very least an important technology that, for better or for worse, is becoming increasingly entrenched in everyday life. Individual organizations may have different approaches to community outreach – from evangelical zeal to quiet encouragement – but the basic messages are the same: access to CMC should not be purely for the wealthy, and the increasing chasm between the worlds of the information haves and information

have-nots must be narrowed. Although it varies in importance from organization to organization, this essentially political intention underlies all community networks.

BBSS, with their usual focus on a small hobbyist community, are unlikely to extend their limited outreach efforts beyond computer user groups or specific hobbyist interests. They may, however, be involved with basic computer literacy efforts organized by computer user groups.

4.3.4 — iv) Non-commercial and Diverse nature of Content.

As community networks are generally run by volunteer boards, they tend to represent a slightly wider, or at least different, range of views than those of commercial networks. Commercial online services are driven by marketplace demands and often place a great deal of emphasis on commodified brandname information products. Many corporate services are, in fact, owned or partly owned by some of the same interests that control the mainstream mass media. Even those that are not are deeply involved in joint ventures with mass media giants of all kinds. Some of these ventures are of large economic significance. For example, AOL and Compu-Serve fought in late 1995 an extremely expensive battle for the privilege of hosting the New York Times' online material.¹³ (Associated Press, 1995b.)

By contrast, community networks are non-profit organizations and thus not driven or generally affected by the particular demands of advertisers or shareholders.

¹³ — AOL won.

They frequently promote small-scale community organization and participation, rather than viewing computer-mediated communications as a profit-oriented enterprise somewhat akin to broadcast television. Therefore the information content on community networks usually has much lower production values (less slick and professional in appearance) than commercial services, but has the potential to be more in touch with the needs and interests of its smaller, local and more specialized audiences.

It should be noted that community networks are not entirely unique in this respect, however. There are several well-established online systems in existence today that have long served the activist community. For example, in Canada the Web¹⁴ has provided online communication and conferencing facilities for environmental groups, peace groups and other non-profits since 1987.

The Web is a member of the Association for Progressive Communications, (APC) a worldwide cooperative association of similarly-minded non-profit online systems. The scope of the APC is truly global. Current members are AlterNex in Brazil, Antenna in the Netherlands, Chasque in Uruguay, ColNodo in Colombia, ComLink in Germany, Econnect in the Czech Republic, EcuaneX in Ecuador, GlasNet in Russia, GlasNet-Ukraine in the Ukraine, GreenNet in the UK, Histria & Zamir Transnational Net in Slovenia, the Institute for Global Communications (IGC) in the US, which runs the PeaceNet, EcoNet, ConflictNet, LaborNet and Womens-

¹⁴ — Not to be confused with the Internet service based on HTTP standards known generally as the World Wide Web. Toronto's 'The Web' was created some years before the World Wide Web was widely deployed. The similarity of the two names is a coincidence.

Net networks, Knooppunt in Belgium, LaNeta in Mexico, Nicarao in Nicaragua, NordNet in Sweden, Pegasus Networks in Australia, PlaNet in New Zealand, SangoNet in South Africa, Wamani in Argentina and the Web in Canada. (Association for Progressive Communications, 1996.)

Although the APC networks focus on the non-profit community and are driven by a set of social goals on a progressive political agenda, they do not address local issues the way community networks do. The Web, for example, serves all of Canada via long-distance dialup, public pay packet-switching networks and Internet (telnet) connections, but is based in Toronto. It also concentrates on facilitating communications between non-profit activist organizations across the country, not necessarily local community groups.

4.3.5 — v) Information as a community good, not a commodity.

An important consequence of community networks' emphasis on free or nearly free access is that of de-emphasizing the commodification of information. Commercial systems, by their very nature, view their information content as a highly valuable and marketable commodity, and aggressively defend their intellectual property. Correspondingly they tend to maintain an asymmetrical model of content, in which mass-market, professionally-produced and billable information is strongly favoured over user-produced and less marketable content. The proliferation of online pay services such as electronic shopping malls also tends to reinforce this notion of the network as essentially an efficient conduit for directing money out of users' pockets.

By casting the individual as a participant in discussions, the community networks generally maintain a less unequal balance of information flow to and from the user. Community nets also encourage local community groups to post information about upcoming events, services and other material of general community concern. The provision of this type of information, usually of interest to small audiences in local communities, is not a particularly profitable activity and is thus not a major aspect of the average commercial system.

4.3.6 — vi) Community Participation.

Many commercial services place particular emphasis in their promotional material on the access that their systems give to information databases or to popular media content such as online versions of newsstand magazines. The focus is thus on professionally-produced content of one kind or another, with the unspoken corollary that users are expected to be consumers of this material, not producers.

Community networks tend not to offer such forms of mass-market content. Rather, they emphasize individual user participation in community discussion fora. Users are thus, in a modest but real way, information providers in their own right, and not merely passive browsers or consumers.

Many community networks also deliberately choose place-based metaphors of 'town hall meetings' and 'village greens' to describe their discussion areas, stressing a desire to bring traditional concepts of communal public meeting places into the arena of contemporary electronic communications. (Cisler, 1993.) For instance, the

Cleveland Free-Net makes wide use of metaphors (city hall, government building, post office) in its text-based menu system, and many community networks have followed the same model in designing their menus. Shown below, for example, is a screen snapshot from the Victoria Telecommunity Network's main menu, which follows the traditional Cleveland place-based metaphor model.

```
Welcome to VICTORIA TELECOMMUNITY NETWORK *** MAIN MENU *** ==> go main

 1 Victoria Telecommunity Network Headquarters (Register Here)
 2 Commerce Building
 3 Douglas & Yates ... the Hangout!
 4 Government Building
 5 House of Worship
 6 Library and Information Services
 7 Local/Global Community Centre
 8 Medical Centre
 9 Post Office
10 Schoolhouse
11 Science and Environment Centre
12 Arts and Entertainment Centre
13 Special Interest Groups (SIGs)
14 Help Desk
15 Victoria Telecommunity Network Status Report - Spring 1996 ... <Web>
16 DONOR DRIVE - Status of $20,000 target - Started May 18 '96

      * * * * *
      # e-mail address
      # hq@freenet.victoria.bc.ca
      #
      # 4252 Commerce Circle
      # Victoria British Columbia
      # U8Z 4M2 CANADA
      #
      # phone 727-7057 fax 727-6418
      # modem 479-6500
      #
      * * * * *

-----
h=Help, x=Exit Free-Net, m=Main Menu, p=Previous Menu, "go help"=Extended Help
Your Choice ==> █
```

Figure II — Victoria Telecommunity Network main menu screen.

Although many commercial services offer opportunities for individual participation through online technologies such as discussion areas, Usenet newsgroups and Web pages, they rarely focus on the community aspects of such participation. Instead this type of activity is seen as that of individuals chatting with friends or pursuing hobbies and other personal interests, rather than citizens participating in discussions

of interest to a wider geographical community. The former reflects a private consumer-oriented approach; the latter is more communitarian in nature.

4.3.7 — vii) Social goals:

Implicit in this entire discussion is the basic underlying observation that community networks are intended to achieve certain social goals. As noted earlier, large corporate systems exist as profit-driven businesses. They are there to exploit a particular market with the interest of generating wealth for their owners. BBSS generally exist out of personal or hobby interests, though occasionally one finds a BBS dedicated to generating discussion on a particular social issue or cause.

By contrast the non-profit community networks are largely seen by their organizers and supporters as tools to achieve certain social aims. As mentioned in the introduction, these aims include promoting the building of local community, promoting democratic ideals, ensuring that the disadvantaged have the same access to essential technology as the rest of society and promoting a public voice on the information infrastructure.

The next chapter will present a brief history of community networks, and show how these general goals and values have arisen and evolved.

Chapter Five — History of Community Networks.

5.0 Introduction.

This chapter outlines the historical background to modern Canadian community networks, beginning with modest small-scale experiments in the US some two decades ago. Some of the motivations of the early founders are detailed, as are some of the political pressures of the time. Three umbrella organizations of community networks in the US, Canada and British Columbia are also discussed.

5.1 Early Community Networks in the US.

5.1.1 Community Memory — the 1970s.

Although community networks have only become prominent in the past few years, they are by no means a new invention. One of the earliest experiments in creating a community network was the Community Memory Project in Berkeley, California, during the early 1970s. Community Memory was one of the first attempts to pull the computer out of the realm of research labs, universities and large corporations and into the world of public access, and sprang directly from the anti-war and counter-culture movements that flourished in Berkeley during the late 1960s and early 70s. Two key activists behind the project were Lee Felsenstein and Efram Lipkin. Both were firmly convinced that technology could be used for creative social ends, not just

as fuel for the military-industrial complex associated with the Vietnam war. (Levy, 1984.)

Personal desktop computers did not yet exist and minicomputers of the day were expensive machines the size of refrigerators. Undeterred, Felsenstein and Lipkin pushed their vision of online communications for the people by wiring computer terminals into a record shop, the store run by the publishers of the Whole Earth Catalogue and a public library in the San Francisco Bay Area. People were encouraged to use the terminals as an electronic public notice board—posting stories, job ads and treatises on life in general. Posting comments cost a few cents, but all posts were utterly anonymous—there were no user IDs. In addition access to the system was to be had purely from the public terminals, there being no dialup support.

Despite some initial interest the project was unable to last much more than a year, a victim of underfunding, the cumbersome technology of the day and volunteer burnout. It was an interesting effort, although admittedly not a very auspicious start to community networking. (Levy, 1984. Beamish, 1995.)

5.1.2 The early 1980s.

The advent of the personal computer in the late 1970s and the availability of low-cost and low-speed modems for telecommunications purposes brought with it a resurgence of interest in affordable networking. Initially, however, most of the development was concentrated in hobbyist bulletin-board systems, and the earliest large US

commercial online services such as H&R Block's CompuServe, Reader's Digest's the Source and General Electric's GENIE. (of these three, only CompuServe still exists today.)

Although the early 1980s saw the first boom in home computer sales, no major community networking initiatives came about. Microcomputers were primarily marketed as glorified video games, and computer telecommunications was still in a primitive state, plagued by arcane procedures and a vast array of incompatible hardware and software standards. Early micros were also far too limited to serve as multiple-user information hosts—that task then required much larger and much more expensive minicomputers and mainframes. Even the big commercial services were not able to make much progress in breaking out of the niche market of computer hobbyists.

Videotex systems, such as Canada's ill-fated Telidon project of the late 70s and early 80s, attempted to bring CMC to a mass audience by using common television sets as display terminals for set-top boxes. None were ever able to generate a significant user base in North America for a variety of economic and technical reasons, despite optimistic predictions – “Viewdata (ie.: videotex) is an exciting aspect of technology with tremendous benefits for society.” (Martin, 1982, p. vii.) – and, in the case of Canada, significant public-sector investment.

Videotex was a failure for a variety of reasons. Personal computers were already a popular fixture in many North American homes by the time videotex finally hit its peak, and people were not willing to put up with the technical limitations and high

costs of videotex when they had far more capable home computers. There was also a general lack of compelling reasons for people actually to spend the money on videotex—in some ways it was a technology in search of an application. As Eric Raymond remarks, videotex offered “people the privilege of paying to read the weather on their television screens instead of having somebody read it to them for free while they brush their teeth.” (Raymond, 1996.) Although a technological white elephant in North America, videotex technology did see some success in parts of Europe, particularly in France with its Télétel (Minitel) system, owing to very different economic and political circumstances.¹⁵

It is interesting to consider the extent to which videotex’s inherent design paradigms may have contributed to its market failings. Videotex is at its base a broadcast technology, interactive only in the sense that consumers can choose what information they want to retrieve from a selection of choices. Unlike personal computers and truly interactive Internet applications, videotex does not support user-defined information content. One of the main reasons cited for the success of Télétel compared with other forms of videotex, for example, is that users found ways of subverting Télétel’s design, using it for one-to-one communications and not just the broadcast purposes its designers had intended. (Rheingold, 1993.)

¹⁵ — One key difference was that state-owned France Télécom gave terminals away to the public for free. In large part this was because they saw Télétel as replacing traditional print telephone books.

5.1.3 The Cleveland Free-Net — the mid 1980s.

An important marker date for the modern community networking movement is late 1984, when Dr. Tom Grundner of Case Western Reserve University (CWRU) in Cleveland, Ohio, set up an experimental medical information system. This simple bulletin board system was designed to allow the public to leave specific health questions online, to be answered within 24 hours by a health professional. It was little more than an Apple // home computer plugged into a single telephone line, but 'St. Silicon's Hospital and Information Dispensary,' as it was jokingly dubbed, convinced Grundner that there was great potential in the electronic dissemination of important community information. (NPTN, 1993.)

Encouraged by this early success, Grundner worked with CWRU to set up the first community network to use the name 'Free-Net.'¹⁶ This new enterprise had much broader goals than St. Silicon and its medical advice. The Cleveland Free-Net was a general public community information system tied to personal electronic mail accounts, and was launched in July of 1986 amid much fanfare from local politicians. Within months hundreds of people from across northeastern Ohio were calling in every day.

The Cleveland system was much larger than anything that had gone before it in the community networking field, although Grundner was apparently unaware of earlier efforts such as the aforementioned Community Memory. The FreeNet started

¹⁶ — There is a great deal of inconsistency concerning the hyphenation of this name. Many FreeNets hyphenate the name, including the Cleveland Free-Net. Others do not. In this thesis "FreeNet" is used as the generic term. Hyphens are only used in connection with those specific FreeNets that hyphenate their name.

on a minicomputer and by 1989 had moved to a large public-access system based on a number of networked multi-user UNIX machines. The Cleveland Free-Net could be reached by users at home with inexpensive home computers. The decision to run the FreeNet on UNIX systems, which are often connected to the worldwide Internet, was an important one. In so doing the world of freely available public community communications and information systems became linked with the rapidly expanding, but then much less accessible, world of the Internet.

5.1.4 The NPTN.

Following the great success of the Cleveland Free-Net, with its tens of thousands of registered users, Grundner left CWRU and formed the National Public Telecomputing Network (NPTN), an organization that he likened to the US Public Broadcasting System (PBS) with its mandate to promote high-quality non-commercial television programming. He saw the NPTN as a national body to coordinate the growth and development of FreeNet style community networks across the US.

In addition to common lobbying and support processes he also saw the NPTN as developing a common content base, which he called 'cybercasting;' analogous to broadcasting. This common content base would originate at various FreeNets across the country and be distributed to the entire network, much as PBS television programming originates at individual PBS affiliate stations and is then distributed across the US. The prime focus of the NPTN's 'cybercasting' material would be its Academy One K-12 (kindergarten through grade 12) educational content.

The NPTN has been arguably quite successful in achieving some of its goals. There are dozens of NPTN-affiliated community networks in the US, and the total number of users on those systems approaches half a million; the size of many of the individual larger commercial online services. (NPTN 1993. Schuler, 1995.) The past two years, however, has seen a good deal of internal turmoil within the organization, and its momentum has definitely faltered. At this time it is unclear what the long-term chances are for the NPTN networking model. There are signs that the organization's executive is attempting to rebuild the NPTN, but many of the online discussions concerning the organizational structure of community networks in the US are now focusing around the creation of a more informal network of organizations.

5.2 Community networks in Canada.

The history of the community networking movement in Canada is comparatively short, dating back to late 1991. Although the Cleveland Free-Net was well established by the latter part of the previous decade, the community online movement did not get under way in Canada until several years later, when Victoria became the first Canadian city to have a community net. Ottawa's National Capital FreeNet (NCF) followed shortly thereafter, although it had been at the formative stage for considerably longer than the Victoria operation.

5.2.1 Other Canadian community networks.

Following the successes of Victoria and Ottawa, community network organizing committees soon formed across the country. The next two years saw tremendous interest in community networks, with Vancouver, Halifax, Edmonton, Winnipeg, Toronto and a host of smaller centres gaining organizing committees and, later, active community networks.

There was relatively little national coordination in the creation of these networks. There was also no federal government funding despite recommendations from the Information Highway Advisory Council, (Information Highway Advisory Council, 1995) and so each organization sprang up out of its own set of regional and political circumstances. As a result the nature of each organization is quite different. Here are a few brief capsule histories of some of the larger and more prominent Canadian community network organizations.

Halifax, with its Chebucto Community Net, has been very successful in exploring workable alternatives to telephone line access. Their system, based on World Wide Web standards and not on CWRU's FreePort, uses cable systems in the Halifax region for part of its data transmission. It gained a great deal of early support and exposure through an alliance with the Halifax Daily News, one of the city's daily newspapers. Its technical facilities are run through Dalhousie University's Department of Mathematics, Statistics and Computing Science. Chebucto has also dedicated considerable resources to producing a standardized set of software that can be used by other community networks. This package of software, referred to as the

'Chebucto Suite' and based around the Lynx text-only World Wide Web browser, is in use on many other community networks. (David Trueman, personal communication, 1996.)

Montreal's Libertel Montréal received fairly strong support from the provincial government, in large part owing to the relative paucity of commercial Internet providers in that province until fairly recently. The government of Quebec decided that contributing to the development of a local community network would help stimulate growth in the provision of Internet services in the province. It also believed that the promotion of a community network would be politically useful for increasing the percentage of French-language content on online systems, which remain predominantly English. Unfortunately the Libertel has been a long time in development despite this support, and did not open until August of 1996. (André Laurendeau, personal communication, 1996.)

The Toronto FreeNet, (TFN) for its part, had close initial ties with both the provincial government and big business. It was the beneficiary of a large sum of money from the Ontario provincial government—half a million dollars over three years. In addition it received an equivalent amount of corporate funding and support from Rogers Cablesystems, Canada's largest cable television company. In fact, Rogers houses the TFN in its Markham, Ontario, technical operations centre. Little is known about the precise nature of this arrangement, because part of the contract with Rogers stipulates that no information about the deal can be made public: a fact that some in the Canadian networking community find uncomfortable. I was unable

to learn much more about the TFN because nobody with the organization responded to my email queries.

Manitoba's Blue Sky Community Networks followed quite a different model. Most large Canadian community networks started in urban areas, in part because of the presence of large post-secondary educational institutions that provided support and also because of the large population bases reachable within a free local telephone dialling area. Blue Sky, although started in Winnipeg, moved to help tie the widely dispersed rural communities of the province together. It did so by acting as a provincial umbrella organization. It has also worked closely with the province's 61 First Nations bands and the Assembly of Manitoba Chiefs to help bring CMC to reserves across the province. An aboriginal system named "People First Net" has been started by Blue Sky, with some federal seed funding. Blue Sky has also done a good deal of work pioneering "virtual" community networks—that is to say, hosting community networks for smaller rural communities on the main Winnipeg-based hardware. The scope of the Manitoba system is thus quite ambitious. Blue Sky was founded in January of 1994, and the Winnipeg node was officially opened that November. There are now 27 community networks in Manitoba which make up the Blue Sky umbrella organization. The largest node in Winnipeg has 96 dialup lines with 104 terminals in public libraries and 25 terminals in city drop-in centres. Manitoba's rural libraries will also be joining the Blue Sky initiative as a partnership. (Michael Gillespie, personal communication, 1996.)

The Edmonton FreeNet, which came online in October of 1994, has moved the

furthest away of any Canadian community network from the strict FreeNet model of free (no cost) access. Unlike the other community nets listed here, which rely entirely upon voluntary donations and the largesse of government and corporate sponsors, the Edmonton system relies to a great extent on a mandatory \$25 per annum membership fee. (Calgary has since followed Edmonton's lead in this regard.) Provisions are made for low-income individuals to request a waiver of the fee, but otherwise Edmonton requires payment from each individual or organization desiring access. The community network now has three paid staff positions, approximately 11,000 members and 106 dialup lines. (Keith Gross, personal communication, 1996.)

5.2.2 Telecommunities Canada and the federal government.

Volunteers with community networks across the country soon became aware of the common problems faced by their respective organizations, and plans were laid to form a Canada-wide umbrella organization. Telecommunities Canada (TC) was founded in August of 1994, initially to lobby the federal government for ongoing support and to help provide assistance to startup organizations. TC was also closely involved with three annual conferences to bring volunteers of the nation's community networks together. These have proved successful, and a fourth is planned for mid August 1996, in Edmonton.

In recent months, however, TC's focus on lobbying the federal government has been shifting. It has become increasingly clear that the federal government does not

view ensuring the sustainability of the community networking movement as part of its mandate, and has not been very responsive to TC's lobbying efforts in this area.

Industry Canada's Community Access Program (CAP) has been instrumental in the formation of small rural community networks across the country, but appears to be viewed by the ministry as a seed program to kickstart public demand for commercial services in those areas. TC, with its interest in seeing community networks nationwide become self-sustaining and well-supported, has a fundamental ideological conflict with the Industry Canada position in this regard. One respondent described this conflict as being, in part, "the whole issue of whether community networks are a loss leader – or a transmission belt – to the commercial users or whether they have an importance in their own right." Additionally, CAP focuses on simple access provision, as its name suggests, whereas TC is particularly interested in the broader question of developing public space online.

The result of this conflict has been growing tension and animosity between TC and the federal ministry. The former is frustrated with what it sees as the latter's total refusal to promote the development of community-controlled public space along with a failure to provide ongoing grant monies and institutionalized support so that the newly born community networks do not die within a year or two of their formation, for lack of funds. The latter is frustrated with what it sees as a small group of ideologues trying to interfere with the smooth running of its program by altering the terms of its mandate. Given this disagreement between TC and the federal government over the fundamental directions of community networking, TC has recently

moved markedly towards focusing its attentions at a provincial level instead. (Garth Graham, Telecommunities Canada, personal communication, 1996.)

5.2.3 Telecommunities Canada and the NPTN.

Although the NPTN had a modest amount of influence in the early days of the Canadian community networking movement, with Victoria and the NCF receiving some attention from the US organization during their startup days, things have shifted in the past two or three years. Particularly with the formation of Telecommunities Canada, many Canadian community networks felt that their interests were not being served by the NPTN. However it was ownership of the name 'FreeNet' that proved to be the most important and contentious issue.

Although many Canadian community networks have been using variants of the name since as early as 1992 the name 'FreeNet' is actually a registered service mark and thus the legal intellectual property of the NPTN, which quietly acquired the Canadian rights to the name in the same year. Since Canada's federal trademark law overrides any provincial legislation governing the use of names by societies, the NPTN could, if it chose, legally force all Canadian organizations to stop using the names 'FreeNet' or 'Free-Net' as a service mark, or comply with its own terms. In fact, this is exactly what it attempted to do.

The NPTN's position was that any organization that calls itself a FreeNet should conform with some basic standards of service, thus ensuring that the consumer has access to a uniformly high quality product, to use the metaphor of marketing. How-

ever this unavoidably involves placing certain restrictions on what local organizations can and cannot do. The NPTN's list of requirements, such as the demand that the name 'Free-Net' always be hyphenated, were not been well received by most Canadian community networks, and a majority of Canadian FreeNets refused to pay NPTN membership fees accordingly.

Canadian networks found a number of other NPTN policies contentious, particularly the costs for ongoing membership and some of the restrictions imposed by membership. In 1995 the NPTN increased its membership rates to \$2000 US per year, and also required that each FreeNet carry NPTN content, including its Academy One educational material. This sum of money is quite large, particularly for smaller organizations, and many Canadian groups resented the pressure from the US to carry specifically US-related information content. According to organizers of Canadian community networks who have been in conversation with the NPTN, the US organization has not expressed any interest in addressing the questions of the cultural appropriateness of its material. For example, its Academy One information consists of educational content geared directly towards the American school system, such as information on American presidents and the US constitution.

The issue was finally resolved in August of 1996, when TC and the NPTN came to an agreement. Under the terms of this agreement TC members may use the name 'FreeNet,' and TC is likely to pay a nominal fee to the NPTN in recognition of the latter's ownership of the name. Additionally the issue of US-specific content now appears moot, as the NPTN's cybercasting initiative has largely fallen apart.

Nevertheless, the dispute prompted many Canadian FreeNets, including St. John's, Chebucto, Blue Sky, Vancouver and Victoria, to rename themselves, becoming 'community networks' or other variants on the same theme. Those organizations that changed their name report that, although the name 'FreeNet' is both euphonious and recognized, they were having problems with people assuming that 'free' meant that nobody had to pay for use of the network's services. The switch away from 'FreeNet' thus has some useful marketing-related consequences for community networks struggling with low donation levels.

5.2.4 BC Community Networks.

Not all community networks have been in large urban centres. British Columbia is particularly notable for having a rapidly growing base of small networks in the province's rural areas and smaller towns. Already there are operating systems in Squamish (the Sea to Sky FreeNet serving the Sunshine Coast), Trail, Prince George, Qualicum Beach/Parksville, Vanderhoof, Campbell River and a number of other large towns and small cities. There are over a dozen committees in the province either running or planning to develop a community network, and a full list is provided in Appendix B. The popularity of these small community networks may be attributable to the remote and hard to reach nature of many interior BC communities, owing to the rugged and mountainous terrain of much of the province. This may lead to a somewhat greater sense of isolation, and thus network connections could be an attractive way to keep in touch with the outside world.

In an attempt to coordinate the lobbying efforts of BC's community networks an organization named BC FreeNet, later renamed BC Community Networks, was formed in December of 1993 to serve as a unified voice for the various committees and associations. The aim of this organization has largely been to lobby the provincial government and its ministries for funding and to negotiate with corporations for community network support.

Unfortunately, so far the BC government has not lent any significant support to any community networks aside from a small startup grant to Victoria, the odd contribution from individual government ministries, and a small sum to BC Community Networks to establish an informational Web page. The government's current stance, as articulated in its Electronic Highway Accord and Communities Connect Program, is that it will only consider providing seed funding for new community networks and like organizations—sustainability for existing organizations does not interest them. (Government of BC, 1996)

For its part BC Community Networks has maintained a low-key presence. It has not attempted to focus on generating public awareness, but has instead apparently concerned itself with low-level backroom lobbying with the provincial government.

The next chapter examines some of the BC community networks in more detail, drawing upon the interviews conducted for this thesis.

Part III — Empirical Findings and Analysis.

Chapter Six — Description of Selected Community Networks.

6.0 Introduction.

The following capsule histories of each community network organization are derived primarily from the interviews. They are presented here in order to provide background to the context in which the organizations operate and to document the early years of the community networking movement in British Columbia.

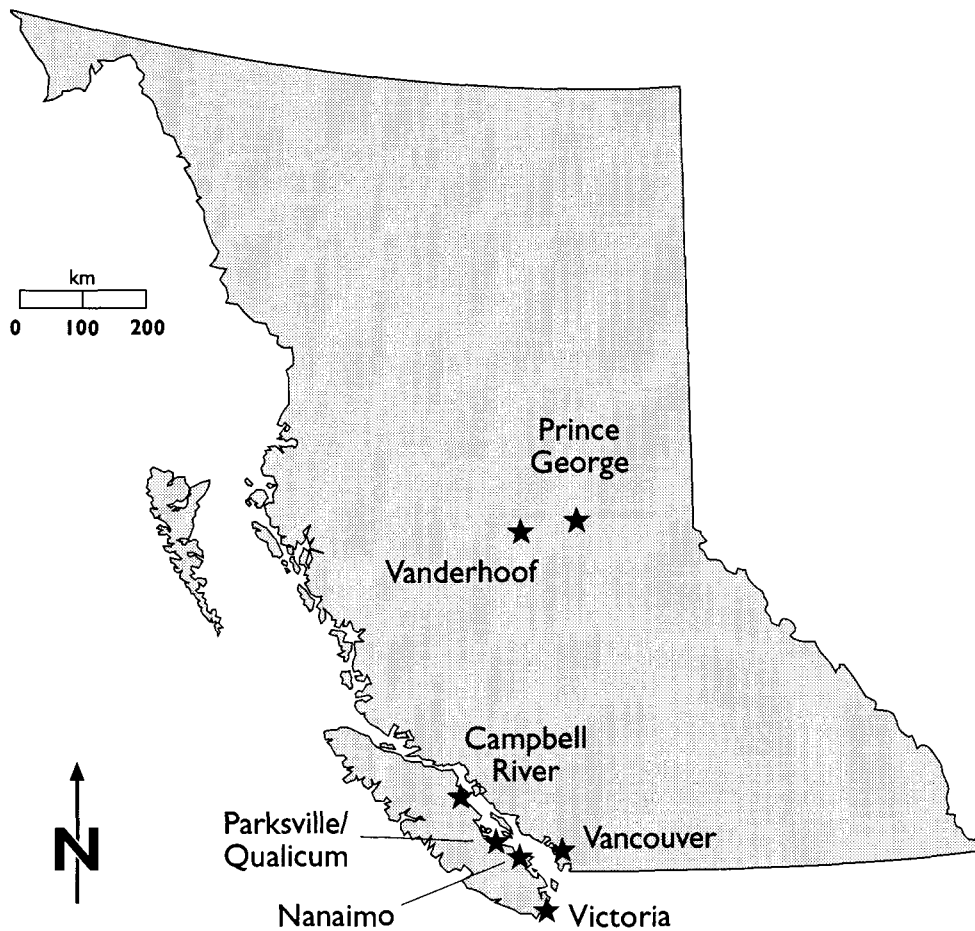


Figure III — Map of British Columbia, showing networks studied.

6.1 Campbell River Community Network.

Campbell River is a small city on the west coast of Vancouver Island, with a 1991 population of nearly 35,000. (British Columbia regional index, 1995, p. 48.) It is located at roughly the midpoint of the island, and is the largest population centre at the north end of the Island. Its economy is mainly based on primary industry, with large mining interests and pulp mills providing the central base of employment. Unlike coastal Island communities further south it does not currently have a large retired population, although the current expansion of the main transportation artery to the area, the Island Highway, will likely bring with it an increasing number of retirees. High technology industry in the area is almost non-existent, although the population base is sizeable enough to sustain a computer retail segment of the economy, so access to consumer-level computer technology is quite reasonable.

6.1.1 Historical background to the community network.

Like most community networks, the Campbell River Community Network began with a small core of dedicated individuals impressed with the vision of community networking. Jeff Goodship, a former employee of the school district, became familiar with the AZTEC community network run out of the Arizona State University in Tempe. He decided such a network would be very beneficial for Campbell River. An initial meeting was held in June of 1994 with Goodship and a handful of other interested individuals. These included Pat Presidente, a technology resource teacher with the school district; Garry Griffin, a manager with CIBC (the Canadian Imperial

Bank of Commerce) and Roger McDonnell, then involved with the local chamber of commerce.

They decided after the first meeting that there was sufficient interest in creating a community network to proceed with some form of an organizing committee, and announced a larger public meeting the next month. They were overwhelmed by the response when some 100 people turned up in a room large enough for 40 people. Shortly thereafter the organization registered itself as a non-profit provincial society under the name 'Campbell River FreeNet.' They later responded to pressure from the NPTN concerning the name 'FreeNet' and renamed themselves the 'Campbell River Community Network.'

A number of interests drove the early days of the community network. At that time there was virtually no access to the Internet in Campbell River. There was a thriving bulletin board (BBS) community, but like most such communities it tended to focus on local hobbyist, videogaming and teenager interests. Some individuals purchased access to large commercial online systems, but these involved costly long-distance phone calls to Victoria, at the southern end of the island. There was thus a good deal of interest in networking that was not being met by commercial operations at the time.

Another imperative in the early days was that of promoting local community discussions, and communications in general. Campbell River does not have a daily newspaper; only two weekly papers are published in the region. The Victoria Times-Colonist had recently discontinued daily home delivery to the area, and the result

was a fairly significant information gap that hampered announcements regarding local events. This was of particular concern to the chamber of commerce, which felt that the absence of a community information hub such as a newspaper, that could provide a regularly updated community information bulletin or calendar, was detrimental to local economic development. All promotions of local events were generally done through informal contacts, posters, faxing, telephone and the like.

In addition, the school district was becoming interested in networking local schools for electronic communications, both for administrative and educational purposes. They had some connectivity through the provincial government's Community Learning Network (CLN) via the government-owned BC Systems Corporation, but were limited at that time to modem access over telephone lines.

The final key element of the project resulted from a remarkably fortuitous opportunity that makes Campbell River unique in Canadian community networks. Unlike most areas of the country, Campbell River's cable television interests are not controlled by large corporations. Most Canadian cities have cable networks owned by one of three giants: Rogers Cablesystems of Toronto, Shaw Cable of Calgary or Vidéotron of Montreal. However Campbell River has its own CRTV, a locally owned and controlled service run in the manner of a cooperative. Each resident with cable television pays a \$100 debenture in addition to monthly rates in order to be serviced by the system.

The significance of this local cable ownership is profound. At one level this means that Campbell River residents enjoy some of the lowest cable television rates

in the country, but more importantly their television access is not controlled by outside profit-oriented interests in remote cities. They have direct control over the physical network and over the content of the system. Two of the founders of the Campbell River Community Network, Griffin and McDonnell, were also board members of CRTV. They proposed that CRTV use its extensive coaxial cable network to carry computer data in addition to regular video signals. Their motion passed, and the fledgling community network acquired in a moment a sophisticated and high-bandwidth (ie.: high-capacity) communications infrastructure that spans the city. The bandwidth of this network is of particular note. At 10 Mbps (megabits per second) this network runs at the speed of a local Ethernet network, rather than the considerably slower 14.4 or 28.8 Kbps (kilobits per second) speed of regular telephone modems.

The community network then moved quickly to consolidate its relationship with the school district, which moved away from the provincial government's CLN in favour of the local community network. It used the community network and the cable company as the networking backbone for its educational networking needs. The community network was also able to secure a sizeable grant of \$18,000 from the Vancouver Foundation, a non-profit charitable foundation, to help with their startup phase.

6.1.2 The technology.

By March of 1995 a test system consisting of a consumer-level 486 personal computer

had been acquired, and was made accessible via four dialup phone lines and the cable network. The hardware was installed on the premises of CRTV itself. Rather than using a complex UNIX-based system like most community networks, Campbell River chose instead a much simpler but still quite flexible software package known as Worldgroup. Developed by a relatively small US software development company, Worldgroup focuses on providing local email, real-time chat services and discussion groups, with protocol gateways to the Internet. It uses custom software running on personal computers running Windows software, but is also accessible over old text-only systems.

Within a year the community network had expanded its server base to two Pentium-class servers, hosting 16 dialup telephone lines. These telephone lines have a very wide catchment area, in part through creative use of telephone forwarding techniques. The local phone company, BCTel, has a complex set of rate structures and zones in the area. But by acquiring a dialup number in one calling zone and forwarding each incoming call to another number in the next zone, the community network was able to encompass a large geographical area without the need for long-distance calls. In fact their effective local calling area stretches as far south as the Comox Valley and Hornby Island and as far north as Sayward and Cortez Island; a distance along the coast of over 130 kilometres.↵

Many schools in the area are also linked to the network via the cable system. The cable network is not used to deliver data to home or business users as yet, (some 12,000 potential subscribers) although the community network intends to do so as

soon as is practicable. They have an extensive fibre optic trunk network in place, but cable modems are not yet a consumer product. Cable modem technology is, however, maturing rapidly owing to tremendous pressure from large commercial interests.

The community network also provides Internet access through a connection with Nanaimo-based Island Internet, a commercial Internet service provider. In many areas there has been a good deal of tension and conflict between the community network and local ISPs, but this has been avoided in Campbell River. Indeed, the Campbell River dialup hardware owned by Island Internet is housed in the CRTV facilities alongside the community network. According to the respondents, Island Internet and the other commercial provider in town, Digital Ark, view the community network not as a threat but as a useful education base. Users often migrate, in a sense, from the training grounds on the community network to the commercial operations.

6.1.3 Local information.

The community network is very much oriented towards the provision of local information content. The system houses an 'Information Centre' which contains calendars for schools, information from the chamber of commerce, municipal information, synopses of city council minutes, a guide to local parks and recreation facilities, and so on. Information updates are maintained by the local volunteer society.

Another area of interest is making important local and regional information available to users. One of the respondents cited the example of the Nisga'a agreement. In mid February 1996 the federal and provincial governments and the Nisga'a Tribal Council announced that they had reached an agreement in principle concerning a treaty over the Nass river valley in northern British Columbia. The agreement was published in full on a provincial government Internet server. Shortly thereafter the Campbell River community network made the full text available for all its users; even those without Internet access.

Other local information includes updates from the District of Campbell River and the Municipality of Sayward, a small town to the north of Campbell River. The local hospital maintains in-patient and out-patient information and rules. And there is an extensive database containing contact information for some 400 local clubs and organizations.

As with other community networks the respondents reported a fair amount of difficulty in bringing organizations online. Even larger, more established organizations such as local government have proved difficult. The reasons the respondents cited included lack of adequate training, some fear or apprehension of the technology and a feeling that posting information electronically was not of particularly high priority. Nevertheless the community network now has some two dozen or so local groups updating their own information, and the network is working on expanding this number. Respondents also noted that some organizations, such as CRTV, are now using the network as a form of in-house communications infrastructure, as

board members regularly use email to keep in touch.

6.1.4 User Structure.

Guests to the system (people who have not registered for an account in their name) have free read-only access to all local information. Users can apply for free accounts, which permit them to send and receive local email, chat with other users online and participate in local discussion groups. Internet access is not available to these free accounts, but can be purchased for \$25 per year. Interestingly, the community network reports that some 80% of their user base does not elect for this Internet option but stays with the local material only. The network also sells memberships for an extra \$10 per year, which permits users an additional 45 minutes per day of access to the system's dialup lines. (regular users can only use the system for 45 minutes per day.)

According to the respondents interviewed with the community network, the most commonly used non-information services on the system tend to be affected by the age of the user. Older users favour email, often for keeping in contact with family members around the province and the world. Children and adolescents, on the other hand, enjoy using the local realtime chat service, which permits them to hold live text-based conversations with other users of the system.

6.1.5 Commercial content.

As noted earlier, the Campbell River community network has fairly close ties with commercial interests, particularly Island Internet. Their commercial content policies are correspondingly liberal. They permit, for example, local businesses to purchase space on the system for advertising purposes. The key, however, is local. Businesses are expected to be focusing their marketing attention to local commerce only.

Companies interested in larger-scale marketing efforts are directed to commercial ISPs such as Island Internet.

An important point of note is that respondents emphasized that local economic development was of great interest and importance to the organization. Unlike community networks in large metropolitan areas, for whom local economic development is less of an issue for obvious reasons, the Campbell River organization self-consciously sees itself as promoting the local computer-mediated telecommunications infrastructure for the benefit of the local economy. The network is also seen as a valuable promotional tool for selling the region to outside business interests; a kind of online chamber of commerce brochure. The organization's advertising policies are thus in line with this general philosophy.

6.1.6 Public Access.

As with all community networks, public access sites are a highly desired but costly service, owing to the expense of maintaining a telephone line for a modem. The organization has four public access terminals currently in use and funded by each

host. One controlled-access site is located in the city hall. Another full-access site is located at the public library, one in the hospital and one at the CRTV offices. There are plans to expand to include the local chamber of commerce.

The respondents did not believe that access to the computer hardware was as critical an issue as in some low-income areas. They noted that Campbell River has a relatively high average income, and that two of the largest local employers, timber firms, have instituted employee purchase programs to encourage workers to buy personal computers.

6.2 The Mount Arrowsmith Community Network.

The Mount Arrowsmith Community Network (MACN) serves the Parksville/Qualicum region of eastern Vancouver Island. The region is notable for its large retired population, drawn to the area for its mild climate. (at least in comparison with the rest of Canada.) It is also something of a bedroom community for the city of Nanaimo, to the south. The area does not have any significant high technology industry. The 1991 population for the Parksville/Qualicum area was 28,000. (British Columbia regional index, 1995, p. 35.)

6.2.1 Historical background to the community network.

MACN had its origins with chair Jim Swanson, who was involved with educational technology projects through his work as a teacher. He was acquainted with Gareth

Shearman of the Victoria Free-Net, and was thus familiar with that organization's goals and directions. In conjunction with secretary Douglas Stolar and vice chair Bob Dobinson, he decided that a community network could have great potential for the region, and their first meeting was held in May of 1994, at which Shearman spoke and gave a live demonstration of the Victoria system.

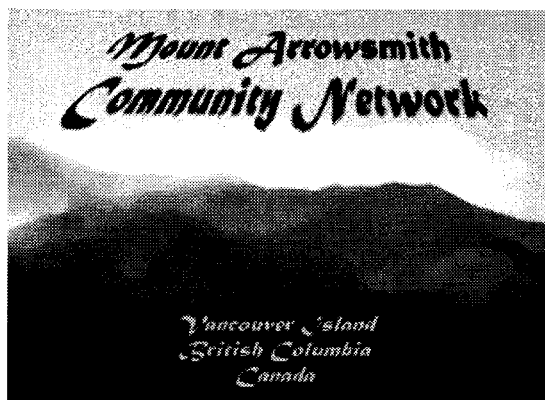


Figure IV — Mount Arrowsmith community network title graphic.

Considerable interest was sparked by this first meeting, and soon monthly public meetings were being held to plan the community net. The organization was officially registered (under the name Mount Arrowsmith Free-Net) in July of 1994. Respondents reported that a good deal of the early impetus came from the fact that the region did not have any local Internet access at the time, and residents felt somewhat shut out from the new networking technology. Additionally there was a feeling of 'We can do it here—we don't have to be in a big city to do it' associated with the early organization.

The community network was the beneficiary of considerable early support from

both the local school district and from the local career centre. MACN has access to a networked lab of computers at Oceanside Middle School, and it uses this facility to great advantage by holding regular meetings at which volunteers and newcomers can learn and familiarize themselves with the system. And it was the beneficiary, in conjunction with the local employment centre, of a federal government CAP (Community Access Program) grant in 1995.

They purchased their initial hardware in August of 1995 and made the decision to work with the Linux free UNIX operating system. By October of 1995 they had a pilot system running, but it was purely for local dialup only—they had no Internet connectivity at all. The fact that their system was completely isolated from the outside world was definitely a disadvantage, and so by December they purchased a UUCP (UNIX to UNIX copy program) feed to a local Internet provider. This gave them batch-sent email and Usenet news, but did not support any direct telnet connections to the Internet. However provision of those services alone was a considerable step forward in capability. Unfortunately, obtaining direct access to the Internet proved difficult to obtain, owing to the relatively poor network connectivity of the region and thus the expense in obtaining a full feed. MACN did not get fully connected to the Internet until the summer of 1996.

Technical problems aside, MACN has been vigorous in promoting local participation in its system development. Respondents noted that their association's regular monthly meetings are well attended by members, and users of their system have a great deal of direct input into the design of their growing service. They did add,

however, that the immense technical delays, largely caused by funding restraints, in obtaining an Internet feed have been something of a frustration and disappointment, both for the volunteers with the organization and with the community at large.

6.3 Nanaimo Online.

Nanaimo is a small city on the west coast of Vancouver Island, at a latitude roughly equivalent to Vancouver's. It has a 1991 area population of some 73,000 people, (British Columbia regional index, 1995, p. 32.) and was historically a forest industry town. In recent years, however, its economy has shifted towards tourism and sport fishing. It is also known as the ferry terminus for passenger ferries from Horseshoe Bay, immediately north of Vancouver. The region has a significant retired population, owing to its mild climate by Canadian standards. As with other coastal Island communities, the Nanaimo region is spread out in a line along the coast, from southeast to northwest, with the Island Highway forming its backbone.

6.3.1 Historical background to the community network.

Nanaimo Online (NO) is an unusual project as community networks go, for two separate reasons. The first involves the manner in which it was founded. In 1994 Gary Korpan was elected mayor of the city on a platform that could generally be called one of 'open government.' Korpan had a keen interest in information technology, and was a participant in Nanaimo's world of local personal computer user groups

and bulletin boards. He was interested in using computer-mediated technology of some sort to promote the communications of the citizenry with city hall. However, in keeping with the 1990s tradition of budget cutbacks and limited services, he did not want such a service to be funded directly by the municipality. Instead he suggested a volunteer-run community service be created.

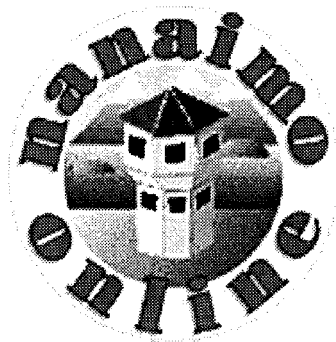


Figure V — Nanaimo Online logo.

In response to this suggestion a local newspaper advertisement was taken out in the late summer of 1994, asking interested parties to attend a public meeting on the topic of forming a community network. Several dozen people turned up in response to the ad, and shortly thereafter Nanaimo Online was formed as a volunteer non-profit society. There was a very small amount of seed capital provided by the city, but otherwise Nanaimo Online has had no direct support from the municipal government. This sort of founding – an initiative at the municipal being spun off to the non-profit sector – appears to be quite unusual for a community network.

The second area in which Nanaimo Online is atypical involves the decision of its board not to build up a large technology infrastructure. In fact, Nanaimo Online

may not be considered a true community network at all by many definitions, because it lacks its own dialup facilities or even server hardware. Most importantly it does not provide email accounts. Instead the network consists entirely of informational content in the form of pages of Web-based information, and the volunteer structure to put it there and maintain it. Users are required to find their own dialup provision if they want to access the system.

The organization struck up a relationship early on with the local school district, SD 68, which had built up its own sophisticated communications infrastructure. At that time there was one commercial Internet service provider (ISP) in the area, and SD 68 was also permitting the public to use its own dialup facilities outside of school hours. A large number of people were thus exposed to Internet connectivity via SLIP (serial line Internet protocol) dialup lines even before local market demand had risen. In fact, the popularity of SD 68's public service was probably an early stimulus to Nanaimo's ISP market. SD 68's UNIX-based Web server is thus the host for Nanaimo Online's activities. Freed of the responsibilities of building up a host system or dialup modem services, the organization has instead focused on the provision of information to the community.

Nanaimo Online still has strong ties with the city administration, however. Chair Cam Scott administers the city's Web-based information systems. Per Kristensen of the city's Information Systems office and Don Grant, the city's special projects coordinator, are also involved.

6.4 The National Capital FreeNet — Libertel de la Capitale nationale.

Ottawa, Canada's capital city, is located on the Ottawa River, which forms the boundary between Ontario and Quebec. The Ottawa-Carleton region has a population of 693,000 (Canadian Almanac and Directory, 1996), and a high percentage of the jobs in the area are directly related to the presence of many government offices. In addition to government bureaucracy some outlying suburbs, such as Kanata and Nepean, have a fairly well-developed high technology industrial base.

6.4.1 Historical background to the community network.

Although the Victoria Free-Net was officially the first Canadian community network to be opened to the public, the Ottawa region's National Capital FreeNet (NCF) was actually an older organization. The NCF is based in Ontario and not in British Columbia but is included in this survey because of its importance as a pioneer in the Canadian community networking field.

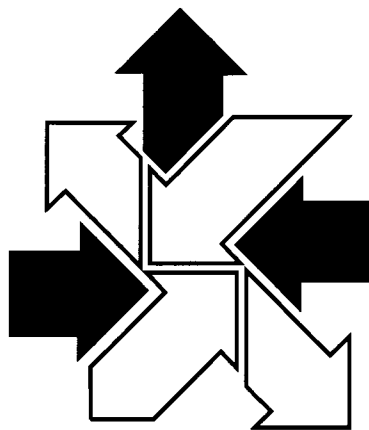


Figure VI — National Capital Free-Net logo.

In November of 1991 Jay Weston and George Frajkor, of Carleton University's school of journalism, heard about the Cleveland Free-Net and decided that a similar system should be put into place in the Ottawa region. With their background in journalism they had a strong interest in the democratic potential for citizen communication, and thus found the idea of a community-run community network to be very appealing. They promoted the concept to David Sutherland of the university's Computing and Communication Services, who enthusiastically helped them set up a similar service in Canada.

The NCF, running out of donated space in Carleton's computer room, soon became the second-largest community network in the world, garnering great support from the community and from local companies, including strategically useful ones such as the Ottawa Citizen newspaper. Like Victoria the NCF also relied on the FreePort software from CWRU, although it added the unique feature of bilingual menus in English and French.

As one of the pioneers in the Canadian community network movement the NCF received a sizeable amount of government and corporate assistance in addition to support from Carleton. The social democrat NDP government of the time provided a large piece of funding as part of its telecommunications infrastructure program, which allowed the NCF to acquire a sizeable dialup pool of modems—eventually over 160 lines. (Ontario Network Infrastructure Program, 1993.) The initial donation of their Sun Sparc 10 UNIX server was funded by Sun Microsystems and Industry, Science and Technology Canada (now Industry Canada) and they also received

support from local telecommunications hardware maker Gandalf.

Like most community networks in the country, the NCF is currently in the process of moving towards a Web-based system.

6.5 Nechako Access Network Organization (NANO)

The Nechako Access Network Organization (NANO) is based in the town of Vanderhoof, a remote agricultural community located in the interior of British Columbia. The 1991 population of the Vanderhoof area is approximately 15,500 people. (British Columbia regional index, 1995, p. 324.) It is a very large region, some 2,000 square kilometres, and thus has a very low population density.

6.5.1 Historical background to the community network.

NANO had its origins in September 1994 with John Rowlandson, who had recently moved to Vanderhoof. He noticed that there were no opportunities for the public to access the Internet, except for placing long-distance calls to Vancouver and other large centres, and so put up a notice in a local co-op asking if anyone else was interested in looking into the problem. He got a small group together, and NANO had its first directors' meeting in November of that year. From this meeting a core group of directors was formed.

The directors met fairly regularly for the next few months, fundraising extensively. By August of 1995 they had raised some \$20,000 from local funds, and were able to get a test system based on consumer PC hardware and the Linux operating

system online. Later they also became a beneficiary of a federal government CAP (Community Access Program) grant. By October of 1995 Canada's first rural remote community network was operational.

Originally NANO obtained a network feed via the local school district, SD 56. It had a fractional T1 (128K) connection through WesTel Communications for use by school administrators, and NANO was able to purchase excess capacity of that feed for use with its community networking services for a brief period.

The school district underwent some political changes, however, amalgamating with another neighbouring district. As a result its excess network capacity was no longer available and NANO was forced to look elsewhere. After extensive discussions with local business, NANO ended up forming a partnership with what was to become a local Internet service provider. It now anchors this service, providing access via four dialup lines to its text-only system for a mandatory \$35 per annum fee. However, users coming in via NANO's public access sites, and thus not tying up the dialup lines, do not have to pay this fee. At present it has 230 members.

The respondent interviewed mentioned a number of difficulties in reaching certain segments of the community. First, the area is the base for a number of agricultural religious communities, such as a settlement of Mennonites. These communities tend to be very traditional in nature, and frequently shun new forms of technology. The Mennonites in particular, while not strict Old Order, are nevertheless distrustful of modern technology.

Second, the area has an extremely high percentage of party line telephones—

lines shared by several residences. One consequence of this is that modem use is impossible, because CRTC¹⁷ (Canadian Radio-television and Telecommunications Commission) regulations do not permit modems on party lines. The First Nations reserves, for example, are largely served by party lines and thus would have no way of accessing a dialup system even if they had the computers necessary to do so. The party line issue is a major one in the area, and NANO has taken an active role in highlighting the problem in the media as part of its advocacy work. It also organized a petition to the government over the question.

Community outreach is of great importance to NANO. In the summer of 1996 the organization was able to hire a pair of summer students to work on training programs to help people learn the system. In addition, NANO has built an innovative portable Mobile Access Centre designed for the purposes of rural training and outreach. This access centre consists of four laptop-style personal computers, linked together in a small local area network. (LAN) It has the necessary hardware so that all four connections can be multiplexed over a single phone line. It is thus easy to pack up the system, take it to a workplace or private residence, plug it into the telephone and have an instant online training centre – in familiar, non-threatening surroundings – for up to four people simultaneously.

In addition to this mobile centre the organization maintains public access terminals at the local public library, Vanderhoof's adult learning centre and the chamber of commerce.

17 — The Canadian Radio-television and Telecommunications Commission is the federal government agency that regulates broadcast media and telephony in Canada.

6.6 Prince George Free-Net.

Prince George is a small city in British Columbia's north-central interior. Historically its economy has focused around the lumber industry, and several large pulp mills and sawmills are based locally. The 1991 population of the area was approximately 87,000 people. (British Columbia regional index, 1995, p. 269.) In the early 1990s the provincial government opened British Columbia's fourth publicly-funded university, the University of Northern BC, in Prince George.

6.6.1 Historical background to the community network.

The Prince George Free-Net had its start with local public library trustee Lynda Williams. She was involved with teaching information systems technology, and met Gareth Shearman of the Victoria Free-Net at a library conference in Vancouver. He suggested that she consider starting up a FreeNet in Prince George. Williams was well acquainted with both the local library community and the technical people involved in running local bulletin board systems, and so took the idea back with her.

The Prince George FreeNet Association was founded in June of 1993, and the group held regular meetings at the local public library. Their first public meeting attracted some 100 people which, given the size of Prince George, represented tremendous interest in the idea. The organization's first technical forays involved working with a local bulletin board system called the Hidden Hideaway, run by Joe Tailleux.

After a year of experimentation with local discussion areas on Hidden Hideaway, the group was able to negotiate an Internet connection through the University of Northern BC. Lyndon Nerenberg, then involved with networking systems at UNBC, joined the PG Free-Net's board as technical vice-president. By June of 1994 the community network had converted its bulletin board to run CWRU's FreePort software, and was connected to the Internet. The organization made a point of using consumer-level 486 personal computer hardware for its server, taking the view that it should not be necessary for smaller communities to have to invest in extremely expensive UNIX workstations to get online.

The group was also the recipient of a large startup grant through three local science and economic development organizations—Business, Culture and Tourism; the Science Council of British Columbia and the Northern Interior Science, Technology and Innovations Council. (NISTIC) This grant allowed them to purchase the original BBS hardware and open with four public dialup phone lines.

The Prince George Free-Net now hosts 12 incoming dialup lines, and successfully runs entirely on a donation basis. The respondent interviewed noted that some 80% of the system's 1400 users contribute a yearly membership fee to keep the system self-sustaining. It continues to obtain its Internet feed via UNBC. Like most community networks that use the original Cleveland Free-Net FreePort software, it is working on moving to a Lynx-based Web system.

PG Free-Net's president, Lynda Williams, has also been involved in promoting the community network concept to other towns in interior British Columbia. She

has given talks at Kamloops, Quesnel and Vanderhoof, to encourage local residents to set up their own systems. She also played a critical role in the early days of both Telecommunities Canada and BC FreeNet (now BC Community Networks), serving as a founding member of both organization's boards. She continues to serve as a board member of BC Community Networks.

The PG Free-Net was originally affiliated with the US NPTN, and in fact modelled itself quite deliberately after the successful Cleveland Free-Net model. However it chose to stop paying its annual affiliation dues to the NPTN after the latter announced that it was intending to charge large fees for use of the name 'FreeNet.'

6.7 The Vancouver CommunityNet.

The Vancouver region is the prime economic area of British Columbia, and is located in the southwest corner of the province. The 1993 population for Vancouver itself was 490,000 and the 1991 population of the entire Lower Mainland of Vancouver was 1.7 million. (Canadian Almanac and Directory, 1996.) Municipalities in the Lower Mainland include Vancouver, Burnaby, North Vancouver, West Vancouver, New Westminster, Surrey, Langley, Richmond, Delta, Port Coquitlam, Port Moody, Coquitlam and White Rock.

6.7.1 Historical background to the community network.

The Vancouver CommunityNet, (VCN)¹⁸ formerly the Vancouver Regional FreeNet, was formed in 1993, following the well-publicized successes of Ottawa and Victoria. According to interview respondents, the CommunityNet was characterized early on by overtly political goals and directions. Some of these directions stemmed from quite divisive debates in the earliest days between those interested in more political aspects of the community network and those wanting to take a somewhat more corporate approach. One respondent commented that “anything that had the slightest tinge of commercial value was frowned upon and met with outright hostility,” and attributed much of this divisive tension to the commercial content question.

In the end, many of the key early organizers of the system were activists, and for them a critical aspect of community networks was that of democratic communication. They were thus interested in grassroots volunteer participation rather than more institutional approaches to organization building. Additionally, several key participants, including founding president Brian Campbell, came from a background in public libraries. Campbell, director of technology for the Vancouver Public Library, was particularly interested in questions of access to information by the general public.

¹⁸ — The online service is known as the Vancouver CommunityNet (VCN); the non-profit society that runs it is known as the Vancouver Community Network Association (VCNA).



VANCOUVER COMMUNITYNET

Figure VII — Vancouver CommunityNet logo.

One consequence of this grassroots orientation was that the VCN was not supported by large institutions to the same degree as other large community networks. Ottawa's NCF, for example, was essentially built and housed by Carleton University's computing facilities. Halifax's Chebucto community network was similarly supported by Dalhousie University. The first large community network in Cleveland was built and housed by Case Western Reserve University.

Vancouver's CommunityNet did not initially receive significant technical support from any large institutions. Most of the public libraries did not have enough of a computing infrastructure at the time to support a community network. Neither of the region's large public universities – the University of British Columbia (UBC) and Simon Fraser University (SFU) – was interested in officially supporting the community network, and a similar resistance was encountered from the area's small community colleges, although it should be noted that most of the community colleges had very modest computing facilities at the time. Additionally, no individuals

with enough influence to champion official support from such organizations were volunteers with the CommunityNet.

This posed a major problem for the nascent organization. The costs and overhead involved in maintaining a community network can be significant, and the technical expertise required can be hard to find. Difficulty in obtaining such support undoubtedly was a major contribution to the delays in the VCN's startup phase. At least one respondent offered the opinion that the organization's intense focus on promoting grassroots participation may have contributed to this problem by creating an atmosphere in which institutional support was discouraged. All large successful community networks have enjoyed such institutional support at some point.

Despite the lack of formalized technical support from a major institution, by early 1994 volunteers employed by UBC's computing services facility had a test system running, and a small UNIX workstation – a Sun IPX – was received as a donation from Sun Microsystems in the US.¹⁹ The community net was also able to maintain a small office at SFU's Harbour Centre campus for a brief period.

At this time the controversial decision was made to purchase a licence for CWRU's FreePort software and use it as the basis for the network's menu system. It was controversial because the tremendous limitations in FreePort's simple BBS-style interface were already apparent. FreePort supports nothing more than simple text-only (character based) menus which allow the user to choose options by typing in

¹⁹ — US workstation manufacturer and UNIX software provider Sun Microsystems was very much involved in the seeding early community networks by donating reconditioned second-hand machines to startup operations. Several Canadian community networks were beneficiaries of this early support. Sun had ceased donating to community networks by 1994, however.

numbers. However the technical volunteers felt at the time that acquiring FreePort would require less work than building up a system based on other UNIX software, such as Lynx (a text-only World Wide Web client) or Gopher.

In mid 1994 the VCN acquired office space in the 411 Dunsmuir Senior Citizens' Centre in downtown Vancouver. Several VCN volunteers, including then vice-president (now president) Margaret Coates, were involved with organizations housed at 411, which considered helping get older people online part of its educational mandate. Both the 411 Seniors Society and NAOC, the National Academy of Older Canadians, have been involved with CommunityNet educational ventures in this area. An agreement was reached with UBC to house the main server, which lent the system some stability. The CommunityNet was also able to hire some staff through generous grants from the Vancouver Foundation, a local charitable foundation, VanCity, the city's largest credit union, and a number of government make-work schemes. The entire system, which had been in testing for some time, was officially launched in September of 1994.

Unfortunately, telephone costs on the UBC campus were extremely high, running close to \$100 per line per month. In an attempt to reduce line charges for its data dialup pool the VCN moved its modem facilities downtown, to the basement of the 411 Seniors Centre, and used the Vancouver Public Library's (VPL) Centrex phone switch. This reduced monthly line charges to approximately \$30 per line per month, and was possible thanks to the cooperation of the library, located only a few blocks from 411. The unusual arrangement – modems in one location and the main

server in another – necessitated a leased 56 Kbps (56K) line between downtown Vancouver and the UBC campus, as shown below.

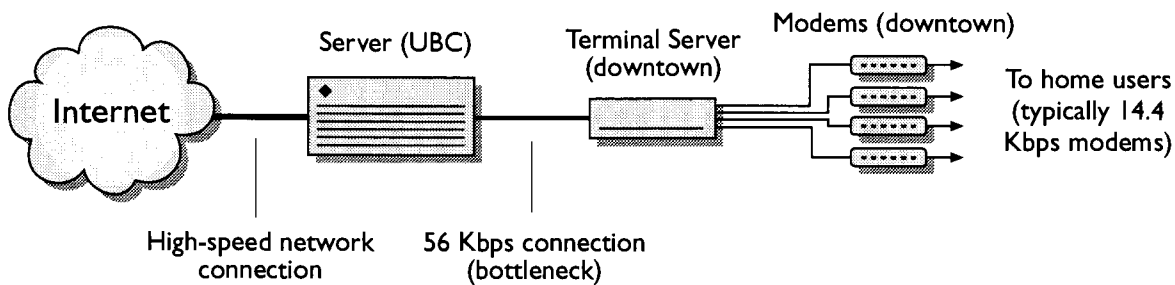


Figure VIII — Vancouver CommunityNet network configuration, ca. 1995.

Ironically, the cost savings of this arrangement were almost immediately eliminated. BCTel announced in early 1995 that for complex technical reasons²⁰ and CRTC regulations, Centrex switches would no longer be allowed to support modem (i.e.: non-voice) traffic. All Internet service providers, and the VCN was included in this category, were invited to “upgrade” to BCTel’s considerably more expensive all-digital service instead.

This presented a tremendous problem for the VCN. Not only were telephone rates returning to roughly the same levels as they had been at UBC, but the costly investment in the hardware required to support the 56K line was also undermined. It was also becoming clear that the 56K line itself could not handle the demands placed on it by both the regular dialup users and volunteers working in the VCN office.

²⁰ — Centrex switches are not designed to handle the amount of traffic that constant modem use generates. BCTel informed the VCN of this fact some time after they recommended that the VCN switch to a Centrex-based system.

Users were complaining of intolerable lag – lengthy delays between keystrokes – caused by the 56K line bottleneck, and the VCN began casting around for an affordable solution.

It took some time to find a reasonable answer. In the meantime the VCN upgraded its server by acquiring a second UNIX workstation. This machine, a Sun Sparc 20, was bought largely from donated funds and marked a significant step up in system capacity. It was brought online by September 1995, in time for the VCN's annual general meeting. The CommunityNet also converted its community information base from the old FreePort text-only format to HTML, for use with the World Wide Web, at the same time.

After lengthy negotiations with VPL, a solution for the server siting problem was reached early in 1996. The VPL had recently moved to a new building located two blocks from the VCN office. As part of its high-technology wired infrastructure, the library had received the donation of a high-speed Internet connection through BCTel. The library agreed to house the VCN server and modem hardware in one of its machine rooms, and permit the VCN access to its Internet connection. By June of 1996 the move was complete, eliminating the frustrating 56K bottleneck. The VCN also added more dialup telephone lines, bringing the total of public lines to 33.

6.7.2 Charitable Status.

One of the ongoing battles that the VCN has been fighting for some time involves charitable tax status with Revenue Canada. Community networks have been

systematically denied charitable tax status by the government since Victoria first applied in 1993. In part this involves community networks having constitutions ill-suited to satisfying Revenue Canada's strict definitions for charitable status, but it is also because community networks, being wholly new phenomena, do not have any precedent in case law.²¹ This is disappointing for community networks, because it means that funds given to their organizations cannot be claimed by donors as charitable donations. In addition there is a certain aura of legitimacy associated with charitable tax status that many organizations consider desirable.

The Vancouver CommunityNet, through the West Coast Environmental Law Foundation,²² fought this case through the courts. On July 8 1996 they met with success, when the Federal Court of Appeal issued a 2:1 ruling in their favour. (Whyte, 1996.) The ruling was quite clear, with Justice J. K. Hugessen stating that "there is absolutely no doubt in my mind that the provision of free access to information and to a means by which citizens can communicate with one another on whatever subject they may please is a type of purpose similar to those which have been held to be charitable (in the past.)" (Hugessen, 1996.) At time of writing it was unknown whether Revenue Canada would appeal this ruling.

By mid 1996 the CommunityNet had nearly completed its transition from the old FreePort menu system to a purely Web-based one, using the text-only Web

²¹ — Canadian charity legislation is still based, to a large degree, on archaic English law dating back to the time of Queen Elizabeth I. The Charitable Uses Act of 1601 considers, for example, "marriages of poor maids" a legitimate charitable activity, but makes little mention of community-operated computer networks.

²² — WCEL maintains a Web page on the CommunityNet, and supports increased access to open public communications for the purposes of distributing, for example, environmental information.

browser Lynx. It also had nearly 9000 registered users.

6.8 The Victoria Telecommunity Network.

Victoria, located at the southeast tip of Vancouver Island, is the provincial capital of British Columbia. Victoria's 1991 population was 71,000, and the 1991 population for the Victoria area was approximately 278,000. (British Columbia regional index, 1995, p. 12.)

6.8.1 Historical background to the community network.

The Victoria Free-Net, (the original name of the Victoria Telecommunity Network) the first community network to come online in Canada, had its origins in May 1992. Gareth Shearman, a Victoria-based educational consultant, and a number of other people inspired by the Cleveland Free-Net, held a public meeting to measure local interest in bringing such a system to the BC capital. Over two dozen people agreed to participate, and the Victoria Free-Net Association (VIFA) held its first meeting in June.

Within a rapid five month period they had achieved the first part of their goal by bringing a SparcStation 2 workstation donated by Sun Microsystems online, sharing Camosun College's slender 9600 bps Internet connection. Unfortunately because of funding constraints they were only able to provide a single modem number for data dialup, severely restricting the service's utility to the Victoria public. However within

a few months, and with the support of BCTel,²³ they were able to expand their dialup pool.

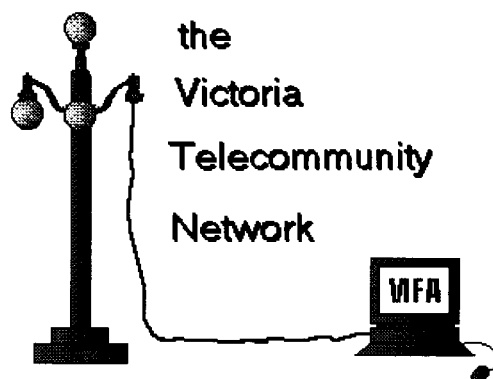


Figure IX — Victoria Telecommunity Network logo.

Victoria was affiliated from its earliest days with the US NPTN and also used the same software created for the Cleveland Free-Net—the FreePort UNIX software developed and distributed by Case Western Reserve University.

The system soon became extremely popular, particularly since it was the first of its kind in the country. Shearman, by then president of the Association, spent a good deal of time travelling around British Columbia, promoting community networks wherever he went. Many community networks, particularly those in smaller communities in the province, were started up after Shearman proposed to a local that he or she take up the cause.

²³ — This is somewhat unusual because many BC community nets report great frustration with their dealings with BCTel, the provincial telephone company. The company does not appear to be actively hostile towards community networks, but does seem largely indifferent. It holds a monopoly over local telephone service in British Columbia, and is owned and controlled by US telecommunications giant GTE of Connecticut. It is one of two provincial phone companies in Canada controlled by a foreign firm. Québec-Téléphone, also controlled by GTE, is the other, but is a minor player in the Quebec market.

Victoria itself continued to expand slowly. Unfortunately it suffered a major setback in late 1994 when its main hard drive failed cataclysmically. As the community network could not afford to maintain regular tape backups and also had no spare backup hardware, the entire system was out of commission for six weeks.

At around the same time Camosun College indicated that the Free-Net's consumption of Internet bandwidth was adversely affecting the College's operations. Camosun had upgraded its 9600 bps connection to a 56K line, but it was still being saturated by Free-Net traffic. VIFA temporarily obtained a network feed through the government-owned BC Systems Corporation, then moved in March of 1995 to space owned by a local firm, Softwords Research International, using an Internet feed provided by Pacific Interconnect.

The community network maintains a network of public access sites through the local public library system. In fact most public libraries in the lower Island now have some form of access to VIFA.

On the hardware side VIFA acquired an old Sun IPX workstation and expanded its telephone lines to 40 public lines. Unfortunately the load on its main server, the ageing Sparc 2, is ever-increasing and causing noticeable system delays. VIFA is thus planning on purchasing a new Sparc 20 or equivalent workstation when it has the funds to do so. On the software side VIFA is planning on replacing the original FreePort bulletin-board style software with a somewhat more modern system based on the Chebucto Suite developed in Halifax.

Despite its early connections to the US NPTN, Victoria decided at its 1995 annual

general meeting to change its service name to the Victoria Telecommunity Network, partly out of concerns that the NPTN would be applying legal pressure to make Canadian community networks conform with its naming requirements, and partly out of the concern that the name 'Free-Net' misleads people into thinking that the service is free to run. However the name of its organization remains the Victoria Free-Net Association.

At the time of writing the Victoria Telecommunity Network has over 16,000 registered users and is thus the largest community network in the province.

Chapter Seven — Analysis.

7.0 Introduction.

Although building of local community is frequently cited by proponents of community networking as an important part of the movement's goals, interviews with respondents reveals a gap between the rhetoric and what is actually happening within each organization.

There appears to be more interest in the building of local community on the part of theorists interested in community networks than in community networks themselves. The concept of community building is frequently implied, alluded to or assumed in organizations' mission statements, but did not appear to be foremost in the minds of respondents.

This chapter examines this issue of community building in terms of three different areas: local community service, political and ideological goals of organizations, and the potential for increasing national and international communications. The first area, local community service, involves an examination of how community networks are said to focus on the information content provision at a localized level, and what activities they actually undertake in this sphere. The second area, political and ideological goals, examines an aspect of community networking identified as key by many respondents—ensuring a public space on the developing information infrastructure. The final area, the potential for national and international communications, examines the ways in which community networks can be used to foster

global as well as local links.

7.1 Local community service.

A stated goal of most community networks is the promotion of some form of locally-oriented community focus. Community networks are generally not considered mere 'on-ramps to the information highway' by their supporters, to use somewhat passé jargon. Access to Internet services is an important component of most community networks, or else they would not have any Internet connectivity at all, but most organizations do not emphasize it. Instead community networks usually focus on the local, encouraging community organizations to host information content and online discussions. An important example of how community networks attempt to emphasize local connections is the way in which most of them do not allow telnet connections (direct Internet connections) to non-community network systems.

This local focus has an important altruistic non-profit motive not unlike that of traditional community service organizations. The community network is seen as offering an important community-enhancing service that promotes the well-being of the wider community, or civil society. According to Douglas Schuler, a founder of the Seattle Community Network in the US, "Developers often have a strong sense of community responsibility and work with community activists and organizations to ensure that useful information can be found on the system." (Schuler, 1995.) And Cislser writes, "The information contained in (community networks) as well as the relationships that form between the participants make up what I call an electronic

greenbelt to reinforce and add value to the community.” (Cisler, 1993.)

7.1.1 Mission Statements.

Sometimes these goals are stated implicitly and not explicitly. For example, the Vancouver CommunityNet has a broad set of goals, first among which is “To establish, operate and own a free, publicly accessible, community computer utility in the Lower Mainland of BC, providing the broadest possible range of information and possibilities for the exchange of experience, ideas and wisdom.” (VCNA, 1993.) Though sweeping in its scope it nevertheless emphasizes the non-profit and local (‘community’) aspects of its services. Many British Columbia community networks, such as Campbell River and Mount Arrowsmith, have mission statements specifically modelled after Vancouver’s.

Others, such as the Prince George Free-Net and NANO, do not use the word community but instead state that their networks shall be used to “to develop and manage local content on the (system) which shall be made available to users free of charge.” Victoria, on the other hand, states that it will “promote and allow the exchange of information with the local community.” All three community networks, therefore, specify local content as being of great importance to the system.

Other organizations have much more specific mission statements. Halifax’s Metro•CAN organization that runs the Chebucto Community Network, for example, operates on a detailed set of principles and goals. These include “The Society will work to provide services that improve and advance the quality of life of our com-

munities.” and “The Society will strive to ensure that the information and services provided will be broadly-based, appealing and useful to as large a proportion of the community as possible.” (Metro•CAN, 1994.)

Many have expressed a great deal of optimism about the potential of community networks to enhance community cooperation, understanding and cohesiveness. Schuler writes that some of the goals of community networking include “rebuilding civil society, securing access to information to disadvantaged or disabled people, community economic development, improving access to health care and health care information, providing forums for minority and alternative voices, improving communication among civic groups, and improving literacy . . .” (Schuler, 1995.) The founders of the NCF were also optimistic about the possibilities for community involvement embodied in their system. In their original funding proposal, cited by Patrick and Black, they wrote:

Because a FreeNet is run by the community and for the community, it helps to encourage and to revitalize community involvement. It creates a partnership, a shared responsibility between the community and existing social institutions for developing and providing timely information. Many people are recognizing that traditional ways of sustaining a community are no longer working well. They are beginning to accept the idea that greater voluntary donations of time and energy are required if their community is to be maintained. The information offered on a FreeNet is provided as a voluntary effort by private citizens and community agencies. A FreeNet thus offers new opportunities for citizens to become more involved in their community, and for groups, institutions and governments to become more visible and accessible. (Patrick and Black, 1996b.)

However, amid this enthusiasm there are also some cautionary notes. Mario Morino asks:

Are community networks part of a social phenomenon that is destined to stall or implode . . . or do they represent a vibrant force, capable of building on the knowledge they have accumulated, adapting to a rapidly changing world and community needs, and ultimately achieving positive, lasting social change in their communities? (Morino, 1994.)

7.1.2 Respondents' Views of Community building.

Most of the respondents interviewed were not overwhelmingly positive about the work of their community networks in the area of community building to date.

Community building was not universally acknowledged as a primary goal of each community network. In fact, some expressed the opinion that community building was not ranked particularly high within their organization or had difficulty understanding why I was asking the question. This may represent a weakness in my methodology, but even after my question was elaborated by defining building local community as the promotion of local geographical community as opposed to the promotion of an online, virtual, community, some respondents were unclear as to what I was asking. This suggests that they may not have considered building local community as a major goal of their community network. One respondent who had considered the question answered it this way:

I don't know of anywhere where (community networks have) become a major community builder. Certainly there isn't a huge participation in the community or political process as a result of FreeNets in the local, geographically

limited sense. Nationally I think certain virtual communities or groups of common interests have gotten together and it's possible to generate 10, 15, 20 thousand emails around an issue on a North America-wide basis, but that's relatively simple. It doesn't involve any real commitment to links and to building.

Despite this, most respondents agreed after some consideration that the enhancing of the local physical community was one of a series of general goals and directions of the community networking movement as a whole, even if it was not a priority.

7.1.3 Lack of clarity and consensus.

There appeared to be a lack of clarity and consensus as to the goals and directions of community networking. The perceived primary goals of each network appeared to reflect the interests and priorities of the individuals interviewed. Each person naturally has his or her own reasons for becoming involved with their local community network, and those reasons tended to affect their opinions concerning the direction of each organization.

Quite often a person's background appeared to influence heavily their views of the priorities of their community network. Community networks serve many different functions and roles, so it is not surprising that respondents reported different priorities in terms of their vision for community networks.

For example, several respondents had backgrounds in libraries, and saw their

community network as being an online resource analogous to a traditional print library. They thus envisaged access to electronic information as being a critical component of community networking. Others had backgrounds in schools and educational technology, and tended to express their views of community nets in broadly education-oriented terms. They did not view community networks as being tied directly with traditional systems of schooling, but rather as venues for more self-actualizing forms of individual education. Other respondents, particularly in rural areas, were quite keen on the potential for community nets as tools for local economic development. Several spoke enthusiastically of ways in which community networks could be used both to promote greater awareness of computer literacy in their area, as well as making their town more attractive for people to live in. Respondents with an interest and history in social activism expressed the hope that community networks would help provide a platform to be used by activist organizations. Other respondents were interested in the technology involved in community networking, and expressed a great deal of excitement and enthusiasm about the field of CMC in general.

These different priorities are not, in and of themselves, radically inconsistent for the most part. However they do represent different internal assumptions and directions. This internal organizational dissent and difficulty in establishing a common vision for the organization may be a primary cause of some of the tensions expressed within some of the organizations studied, particularly the larger ones. In the early days it may have seemed that anything was possible. Community networks could proceed in a variety of experimental directions, and their early successes may

have helped convince participants that their vision of community networking was real, valid and important.

However, as time passed and the great economic and organizational challenges involved in maintaining a growing network infrastructure became more apparent, some of these internal tensions also became more evident. It became increasingly necessary for organizers of community nets to make difficult choices over the allocation of scarce resources. Should priority be given to expanding dialup service? Making more information available via the Web? Increasing training programs? Offsetting the costs of individual services? Questions such as these become increasingly difficult if there are differing internal views as to the basic priorities of the organization itself.

7.1.4 Specific community-related activities.

There are a number of concrete activities undertaken by community networks that are said to promote understanding and communication within a physical community. (Schuler, 1995. Morino, 1994.) These activities include:

- Providing and hosting online discussion areas so that citizens have public fora for discussing important issues.
- Enhancing communications between individuals by providing access to personal electronic mail. (email)
- Assisting local community groups to do the same.
- Providing access to information for both individuals and organizations. This

information can be government information, the sharing of material created by non-profit organizations and so on.

- Ensuring that local community organizations, strapped for financial resources, still have access to online communications.

All of these general activities were undertaken by the community networks examined, but respondents were uncertain as to what to say when asked if these initiatives had been successful in building local community. This is understandable, as it is difficult to assess or measure the success or failure of these activities without some form of study. Nevertheless, it is revealing to note that respondents were far more positive about describing the successes of community networks in providing individual services, such as access to email and Usenet news, than more community-oriented services, such as hosting local discussions and information bases maintained by local community groups. One commented that “We were really more targeting individuals. We wanted to see individuals in this region have access (to) and become able to participate in a global environment and be part of the revolution that was happening, and to have a presence and a role in that.”

Another theme that emerged from several respondents was that of building a tool that people could use as they chose. One respondent said “I don’t think that (my community network) association itself made any effort to build community. We made a place and community just moved in.” Another said that he felt his community network had simply tried to reinforce the fact that the network was there for everyone. “Most initiatives in this area (ie.: community-building) are self-directed by

our users and not by the organization.”

Finally, there were frequently different responses from interviewees in rural versus urban settings, with the former expressing the view that perhaps community-building was really only a concern of the latter. For example, one respondent from a small town said “For one thing, (my town) is already a very tight-knit community. You meet people on the street you know every day. So perhaps we’re not quite as conscious of (community building) as a value, because it’s something we almost take for granted—that we have quite a strong community in that regard.”

7.2 Political and Ideological Goals – Public space on the Net.

By and large, community networks are driven by purely ideological concerns as well as more pragmatic interests like community economic development. Many respondents noted that they had great concerns about control over information systems of the present and future. Such systems, whether they be known as cyberspace, the information highway, the NII (National Information Infrastructure) in the US or a number of other synonyms, are expected by most respondents to become the dominant mode of communications, culture and economy in the future. They are also expected to be controlled almost entirely by large corporations.

Although the Internet had its origins in academic research, in recent years it has become primarily privately owned. The US government privatized the NSF (National Science Foundation) network backbone that coordinated the US Internet in 1995, and the Canadian government appears likely to do the same to CA*Net, the agency

that controls much of Canada's Internet network. As a result certain large interests such as American giant MCI and Sprint, along with local telcos and the cable companies, are now fighting for supremacy over the primary communications conduit of the future.

Herbert Schiller notes that "Much of the (United States') physical space, outdoors and indoors, is now a private preserve, carrying the messages and culture of the corporations that dominate economic and political life. Their domain also extends to another kind of space—the (television and radio) airwaves." (Schiller, 1989, p. 106.) This type of economic domination of communications technology is, it can be argued, inherently undemocratic. In a paper dealing with public-access cable television Douglas Kellner argues that "To be revitalized and even survive, democracy requires the development of an open-access communications system." (Wasko and Mosco, 1992, p. 110.) Many respondents said that they were concerned that a similar form of corporate domination was occurring in the virtual world of computer-mediated communication.

In the early days of the Internet, and in keeping with the academic tradition of sharing information, most services on the Internet were available for free. People traded files, wrote free software, hosted all kinds of interesting services. But in recent years there have been massive efforts expended by private interests in an attempt to find ways of making money from this new technology.

So far much of the revenue generated has been largely speculative. New companies like Netscape, the producer of what is currently the world's most popular

Web browser and Yahoo!, a comprehensive Web index set up by a pair of university students, burst onto Wall Street in December 1995 (Staten, 1995) and April 1996 (Aguilar, 1996) with absurdly huge initial public stock offerings. (IPOS) In fact, in a particularly postmodern twist, neither company had earned much actual money at the time of their IPOs—their income to that point was largely virtual, and their net worth was based more on speculative potential than anything else. Many information services have attempted to base themselves on advertising revenues, modelling their financial structure after broadcast television and print media paradigms, with mixed success.

Nevertheless the software companies' diligent work in setting up secure, encrypted, financial transaction technology in conjunction with credit card firms and other financial giants is leading the Internet more and more towards a kind of glorified electronic mall in which actual funds are transferred. For example Bill Gates, chair of American software giant Microsoft Inc., has written at length about what he calls "friction-free capitalism"; the use of digital networks to permit detailed information exchanges about products and also allow secure, encrypted, financial transactions. (Gates *et al.*, 1995, p. 158.)

7.2.1 Concerns over growing corporate control of the nets.

This kind of heavy commercialization is of serious concern to many involved with community networks. Respondents spoke of "making sure there's public space on the information highway" and "we need community nets as a public voice." Garth

Graham has written at great length about the importance of maintaining non-commercial community networks in the face of wide corporate control. He envisions community networks as being a kind of “electronic commons” or “an electronic public space where ordinary people can meet and converse about common concerns,” a space that is “shared by all.” He believes that it is very much in the public interest for community networks to attain such a position in order to achieve an “equitable and participatory” future society. (Graham, 1995.)

Closely related to these concerns over public space are concerns of local control and ownership. Just as most mass media interests are highly centralized, and most information content is controlled by conglomerates based in Toronto, New York, Los Angeles and London, so too are popular online services becoming centralized. The promise of the Internet, with its decentralized and user-controlled information services is not entirely gone, but many respondents said that they believed that the big businesses that control the mass media today would likely control the online world also. They felt that community networks offered a small chance for maintaining some kind of control over community information at a local level. One respondent said that “I always saw the Internet as a place where people should be able to get the word out and participate, rather than just passively reading. So for me it’s always been important that the FreeNet have local material.”

Additionally, as Kevin Wilson points out, increased corporate control over basic communications brings with it “commodification of communications.” The technology “has fostered a progressive transformation of group work into an electronic

activity with its own price tag.” (Wilson, 1988, p. 136.) In other words, many forms of ordinary human communications conducted today without any financial transactions may become increasingly commodified as more and more human communication moves into an electronic – and thus billable – realm.

Most community networks self-consciously reject this type of commodification by making access to the system free or as low-cost as possible. Variants of the phrase “providing access for those who could not otherwise afford it” were frequently used by respondents.

7.3 National and international connections.

As mentioned earlier, one of the most extolled aspects of the online world is its apparent ability to conquer space. On the Net, physical geography matters little; network topology means all. There is a certain glamour surrounding the novelty of being able to access faraway Internet sites in an instant, but community networks nevertheless maintain a local focus. As Graham describes it, they express the local in the face of the global. (Graham, 1995.)

Some respondents expressed the hope that, paradoxically, community networks could offer some hope in maintaining local connections and local control through these global links. One respondent commented that:

One of the things that you're always at a disadvantage at if you're a citizens group is that city hall has got piles of resources. They can go out and do projects and have a lot of facts behind them. So community groups are always

being dismissed as not knowing what they're talking about . . . Community groups don't have all that information, and they can't go out and do studies.

He thus paints a picture of small, loosely organized groups of people, working largely in the dark, unaware of what other community organizations around the region and across the nation are up to. But the ability to make long-distance connections through a community network offers great hope for improving this kind of grassroots communication between organizations. Environmental groups are doing this in limited ways, trading lessons learnt from localized battles with large interest groups.

7.4 Conclusion.

In summary, it appears that the building of local place-based community is generally not a major priority of the community networks studied. Respondents indicated that they were more interested in what can be characterized as more personal uses of the technology than communitarian uses of the technology. They also indicated that the promotion of publicly-controlled space on the nets was a more important goal than community-building. If this represents something of a tension between the local and the global in online systems, then it appears that providing access to the global is given priority over promoting the local.

This is not to say that an interest in local community is irrelevant for these community networks. Helping local non-profit community groups get online and

promoting local special-interest groups can represent, to an extent, a focus on the local. But these activities were not cited as the primary aim of the organizations studied.

Chapter Eight — Challenges and difficulties facing community networks.

8.0 Introduction.

This chapter examines some of the very real challenges faced by community networks; issues that call into question the long-term sustainability of the movement as a whole. These issues are broken down into four sections.

First are the difficulties and challenges in providing community service functions to their catchment area. These problems include funding, motivating community groups, questions of scale and geography, involving the community and meeting community needs. Second is a comparison of the rural and the urban community networks examined, with an eye to how questions of geographical scale affect community nets. Third is an exploration of some of the inherent problems of the social mores of online discourse, and the nature of such discourse. And fourth is an examination of the nature of CMC technology in general as it relates to freedom and control issues of community networks. This chapter is more interpretive in nature than chapter seven.

8.1 I — The challenges and difficulties in providing community service.

Although most respondents were enthusiastic and excited by their involvement with their local community network, many expressed a great deal of concern over the future of their group. In fact, rethinking and reorganizing group priorities appears to

be an increasingly common activity with many community networks. Such soul-searching and re-evaluation of goals is also becoming quite common on many of the online mailing lists, both Canadian and American, that deal with community nets. This rethinking is frequently attributed to the need to reposition community networks as they move from the initial startup phases to becoming more established organizations and presences.

A large part of this re-evaluation of organizations stems from frustration in certain areas, particularly those in which community networks have encountered significant resistance. Sometimes these problems are economic or political in nature, (ie.: largely external factors) and sometimes they are more internal, related to the very structure of the organizations concerned.

8.1.1 Funding.

Funding is probably the most self-evident problem faced by community networks today. Like most non-profit organizations, community networks are constantly in a struggle to find new and sustainable forms of income. Early on it was possible to rely on seed money from charitable foundations, private corporations and government sources. All of the community networks examined, in fact, received significant startup funds from all three sources.

However all respondents indicated problems in sustaining cash flows within their organizations. Some relied on mandatory user fees (with provisos for individuals on low incomes) and found that that was satisfactory to keep above water.

Others were trying to avoid this route for ideological reasons, with mixed results. The question of whether community networks in general will be sustainable in the long-term still remains unanswered. Regardless, the pressing need for ongoing funding remains an ever-present and draining reality for community networks.

8.1.2 Motivating community groups.

Many respondents reported that it was often difficult to motivate local non-profit community service organizations and groups to participate by, at the very least, putting information up on the community network.

Several reasons for this were suggested by respondents. One possibility was that, despite the mass media appeal of the Internet and growing awareness of computer networking technology by the general public, the field is still often viewed with indifference or even suspicion by many people involved with community groups. As one respondent involved with community organizing at a neighbourhood level noted, "Most of the (community group) organizers that I know are not Internet people. Community for them is face to face. It's social. Their ideal would be what happens in Central America or in local (Vancouver) churches; a close-knit community. It's not sitting around staring at a computer screen."

Of course it is this deep chasm between the virtual and the real that many community networks are trying to bridge. However, by placing such a heavy emphasis on CMC, community networks may be failing realistically to address community organizations' needs. Another respondent commented that "I don't

know if FreeNets, because they concentrate so much on the Internet, understand the importance of the other means of communication (eg.: telephone, fax, face-to-face meetings) and how those affect community groups.” Another respondent said “I think (community networks) can only be an ancillary to local community-building. It’s not the primary tool. The primary tool in the local community will always be face to face. And frankly, I find that a positive rather than a negative!”

The marketing of computer technology may have another unexpected negative consequence. One respondent mentioned that in her community outreach efforts she was encountering the belief that one needs an expensive multimedia computer costing several thousand dollars in order to do anything useful and thus any form of CMC was well out of the reach of struggling non-profit groups. The flashy advertising of computer firms desperate to sell more high-margin hardware laden with excitingly expensive optional extras would seem to suggest that it is an absolute necessity to have such big-ticket equipment just to get online. According to this respondent many community groups were unaware that adequate basic access to electronic mail, Usenet discussion areas and text-only Web browsing was possible through a \$50 second-hand home computer and a \$10 modem.

Another possible reason cited for this reluctance to get connected was that many organizations, struggling with the day to day burden of keeping a non-profit group afloat, just do not consider working with community networks a high priority and thus never get around to it. It simply does not seem worth their while to put information online when only a small minority of their audience has access to the

technology on a daily basis anyway. Several respondents reported that many groups that they contacted frankly did not believe that their organization would benefit at all by having their material posted on a community network and that they were doing a perfectly respectable job already in reaching out to their target audience. Another respondent, trying to convince a local women's shelter to install a public access terminal, found that the response was "if we could afford another phone line in here it'd be used for women without phones to make calls, not used by some computer."

In some ways community networks can be seen as being a little bit ahead of their time. It may be almost inevitable that some form of CMC system, whether along the Internet model or some other model, will form the backbone of most non-personal interactions in the future, the way the telephone system is today. When that occurs then even smaller community organizations will have to have some form of online connectivity as a matter of survival just as they need telephones and fax machines now. But until that time computer nets may often be seen as just the playground of computer nerds or the wealthy. Schuler notes that "It is important to realize that current on-line systems offer very little for the economically disadvantaged. It will be necessary to provide services that are genuinely useful for people who aren't being served." (Schuler, 1995.)

It seems likely that something of a chicken or egg situation may exist in this avoidance of computer networks by many ostensible beneficiaries. Some form of low-level public access to community networks is often available through public

libraries to even disadvantaged individuals, but they may not spend the energy learning how to use the systems if they believe that there is no material there that might be of benefit to them. But there is such a lack of material in part because those organizations involved in its dissemination may feel that they lack a large enough percentage of their audience online. People are far more likely to use a service that they see as being directly beneficial to them in some way. The most popular IP (information provider) Web page on the Vancouver CommunityNet by far at the time of writing is the government-sponsored Human Resources Development Canada (HRDC) job bank page, which lists employment opportunities.

Whatever the reasons for this difficulty in getting non-profit groups connected to community networks, the result is that many volunteers in the area of coordinating community information content reported a high level of frustration and burnout.

8.1.3 Questions of scale and geography.

The community networks operating at an urban scale faced the particularly difficult challenge of the ambitious scope of their projects. For example, the Vancouver CommunityNet (VCN) is the only community network for the entire Lower Mainland of British Columbia, a population of some 1.7 million people. Not only is there an issue with this enormous population base, but the region spans several large and historically independent municipalities, including Vancouver, Burnaby, North Vancouver, West Vancouver, Surrey, Richmond and New Westminster.

The political difficulties of dealing with such a large area and the disparate municipalities within it seem likely to pose significant problems for even well-funded and organized institutions and have certainly hampered the VCN's efforts. One respondent, formerly involved with the Vancouver CommunityNet, lamented the difficulty in getting any form of cooperation from local government. There are sometimes quite pronounced political rivalries between these municipalities, which makes building an organization like the CommunityNet, intended in part to bring communities in the entire region together, quite difficult. Another respondent suggested:

Perhaps (organizing the community network) was difficult because of the vast political structure of the Lower Mainland. In some jurisdictions organizing a community network may have been easier because there was a single local government.

More important than the political issues with municipalities is the ambitious nature of the VCN's scope itself. Most writers looking at the idea of enhancing local communities stress the necessity for work at a small-scale, localized level. Trying, therefore, to build a sense of local community at such a regional scale would seem to be a particularly Herculean, an impossibly absurd, task. At least one respondent, from a rural community network, offered the view that working at this large scale requires that a group take on some form of corporate organization, and that small-scale human contact is inevitably lost as a result. Despite the notion that CMC inherently abolishes barriers of space and time it seems that, in the field of community networking at least, questions of space and scale are still of great importance.

8.1.4 Involving the community.

Involving the community was cited by most respondents as being of key importance, but there were different views as to the difficulty involved in bringing people together. Respondents' opinions were generally connected to the successes or failures of the organization with which they were involved. Some, such as Ottawa's NCF, had attained a large enough size, a kind of critical mass, to attract large numbers of participants through sheer momentum in addition to regular public demonstrations and other awareness-raising sessions. Others, generally in smaller communities, reported good success in bringing people in their towns together. And others, such as Vancouver, noted great difficulty in generating community involvement.

The NCF has some 600 local special interest group (SIG) discussion areas online. Admittedly a large number of these SIGs are dormant or inactive, but they nevertheless represent a large body of people involved in the use of online newsgroups. One of the main barriers cited to the success of these SIGs was system congestion. Like most community networks the NCF's telephone lines are taxed to the limit, and constant busy signals are a regular user complaint. Many people have taken to using a commercial ISP for dialup, and then telnetting (connecting directly to the NCF from their commercial ISP) over the Internet. The fact that they are doing so rather than accessing other services on the Internet is testimony to the popularity of the SIGs and other NCF-specific services, but unfortunately it also means that the NCF's computer hardware is having to deal with a very heavy system load.

According to two respondents there have been repeated calls by users on the Ottawa system to export the most popular SIG newsgroups to academic and commercial servers in the Ottawa region, thereby distributing the load over the Internet rather than on the overstressed NCF hardware. This was rejected by the NCF board, however, on the grounds that local SIGs are a critical component of the NCF and thus an important aspect of the service's long-term survival. Exporting the SIGs would, therefore, diminish the unique character of the NCF.

Other community networks have tried to involve the community on a more active basis. Vancouver, for example, has an Equal Access committee charged with reaching out to underprivileged sections of the community underrepresented on online systems. Its mandate is to involve more women, disabled people, visible minorities including the aboriginal community, and so on. Unfortunately Vancouver has not been as successful as the NCF and other community networks in attracting the same kind of participation, according to respondents interviewed.

The reasons cited by respondents were not generally connected with the existence of the Equal Access committee. Theories offered tended to stress that the participation problems occurred despite the committee's efforts. A major area of concern was related to the fact that the Vancouver CommunityNet has only 33 incoming data phone lines at time of writing. This is hopelessly inadequate to meet user demand. At least 200 to 300 telephone lines would be needed to begin to approach a reasonable user to phone line ratio, according to estimates given by respondents.

This limited number of telephone lines was a direct result of high phone line pricing. Earlier on the VCN was able to use a phone line switching technology known as Centrex through an agreement with the Vancouver Public Library. This resulted in phone line costs of approximately \$30 per line per month. In the summer of 1995, however, BCTel announced that it was no longer permitting modems to be attached to Centrex lines, for complex regulatory and technical reasons. Almost overnight the VCN's telephone line rates tripled. At nearly \$100 per line per month, a figure that includes federal taxes, Vancouver's community network is paying among the highest phone line rates of any community network in the country. By comparison the NCF was paying \$25 per line per month during its early days, owing to lower overall phone pricing and assistance from the provincial government.

This telephone line access problem is significant. Constant busy signals are a sure way of discouraging potential users. Even the most dedicated supporter of the system is likely to feel a little frustrated at having their modem redial the phone several dozen times to get in to the CommunityNet. As a result of this access bottleneck usage rates of the VCN's hardware are quite low compared to other community networks in urban areas. Only 40-50 people are online simultaneously during peak periods, compared with roughly 200 individuals with the NCF and its 130 telephone lines.

Access problems were thus one reason cited for poor user participation rates. Few people were able to get onto the system at any given time, and as a result no critical mass of user-oriented information has built up. Users on other systems with fewer busy signals therefore have fewer reasons to telnet to the VCN.

Another important reason for the VCN's largely unsuccessful attempts at community involvement point to organizational problems. The VCN, like most older CommunityNets in Canada, chose to use the Case Western Reserve University (CWRU) FreePort software as its menu system front end. However, writing menu pages for FreePort does involve the mastery of somewhat cryptic commands that are based on an understanding of the underlying UNIX system software. Early organizers decided that the difficulty of formatting information content for use with the FreePort system would be a significant barrier to participation by community organizations.

In response to this concern the VCN decided to implement a system of volunteer liaisons. Each liaison would work with interested community groups in getting material up on the system. There were also ambitious attempts in the early days to write easy to use software programs to facilitate this process, but these attempts were unsuccessful and some partly-finished prototypes were all that resulted.

Nevertheless the VCN continued with its liaison model. Unfortunately this placed a significant burden on these volunteers, who soon burned out, usually for the reasons cited earlier in connection with the difficulty in motivating community group participation. Without an adequate number of liaisons, and without any means for encouraging community groups to build their own menu pages, the system ground to a halt. This, coupled with intense concerns on the part of the system administrators over system security, led to a situation in which only two or three overworked volunteers had permission to put material onto the system at all. Thus

the well-meaning attempt to simplify the work of community groups resulted in a system with little local information content. Similar problems prevented the formation of any SIGs on the Vancouver system. And, once again, without a large base of locally-oriented material there was little incentive for participation from the broader community.

In the past year the CommunityNet has attempted to rectify this problem of little local content by focusing on the provision of World Wide Web page hosting. The Web, unlike FreePort, is a very popular and open system. There are easy to use tools to automate the Web page creation process, and many people are skilled in using HTML, the Hypertext Markup Language that underpins the Web. By moving away from the primitive and archaic FreePort software in favour of the Web, by encouraging community groups to develop their own information content and by giving those groups access to modify their own files directly the VCN has had some modest success in catching up and improving its paucity of local material.

One respondent noted that the best way to involve community groups is to give them access to the system in a fashion that also gives them a sense of ownership. Users must have control over their own information content. If intermediaries are involved in the system unnecessarily, people seem to lose interest in the process, as they no longer feel like active participants.

At the same time, community networks can play an important supporting role by providing training or the opportunity for users to help each other. Helping to promote an informal support network of volunteers is perhaps one of the more

valuable contributions a community network can make.

8.1.5 Meeting community needs.

It may seem a self-evident consideration but several respondents said that they felt that their organization had not adequately considered the needs of the community prior to launching their system. The excitement of providing a new computer-based service may have obscured the need to evaluate what is likely to succeed and what is not. One respondent commented that “We were just assuming that people would get on board because it was new and different.”

Part of this problem may lie with the notion that Ottawa and Victoria, the pioneers of the Canadian networking scene, set certain expectations that were simply unrealistic for other localities. For instance, neither Ottawa nor Victoria had a commercial ISP market at the time of their respective launches. Aside from individuals at universities and some research firms and some hobbyists relatively few people had any form of Internet access in those early days. Part of the initial drive that pushed the first community networks forward was from early adopters keen to gain access to the world of the Internet. This early base, according to respondents, helped give the systems a stable user base from which they could expand into the non-computer user community.

By contrast Vancouver, for example, had a well developed ISP market by the time the Vancouver CommunityNet came online in late 1994. Mind Link, a local bulletin board service that grew into an ISP, and Wimsey, a service aimed at business

users and sophisticated hobbyists, had already acquired the early adopter market. Both formerly independent firms were swallowed up by East Coast giant I*Star Internet in late 1995. The CommunityNet, then known as the FreeNet, offered fewer services than either commercial ISP and had hardly any dialup modem lines, which meant that no early users of Internet considered it seriously. In those days some commercial operators fiercely opposed any form of government support for the fledgling community network on the grounds that doing so would represent unfair competition to the small homegrown businesses that sold Internet connectivity. In fact, the reverse appears to have been the case—the commercial providers seriously undermined any success the community network could have attained simply by being there first.

Additionally, the VCN in its early days did not manage to implement a successful community outreach program to involve other community organizations. One respondent from Vancouver put it quite strongly, saying “One thing we were a failure at, which is really too bad, is the community access stuff. Getting groups on the system, for instance.” By not encouraging local groups to host their own material, and thus failing to build up a content base of community information, the VCN simply ended up providing email and Usenet news services to individuals who could not afford – or did not want to pay for – a commercial service. As a result there was not enough to differentiate the community network from commercial operations, except overall service quality was somewhat lower owing to telephone line restrictions.

Not all community networks encountered such problems, however. Campbell River's community network focused on local information from the outset. They recognized early on an important community need – the lack of a daily newspaper in which the community could learn about local events – and attempted to focus on this issue by making local information available online. They worked with the local volunteer centre to update their material and hosted useful directories of community groups in the region.

Unlike urban community networks, Campbell River has a strong economic development focus as well. Larger community networks generally prohibit any form of commercial content aside from advertising in the form of recognizing official sponsors. Campbell River, however, encourages local businesses to advertise on their system, so long as that advertising is directed at the immediate community. In addition to hosting actual commercial information respondents from the smaller networks also expressed a desire to promote their communities at a wider scale, much as their local chamber of commerce does. For example, Bev Collins of the Powell River Community Network (PRCN) writes that the PRCN is “a very valuable tool for economic development – Chamber of Commerce – tourism and business. We have had instances of people relocating to Powell River based on the information they have found on our Web site.” (Bev Collins, personal communication, 1996.)

8.2 II — Rural and Urban Community Networks.

There were some striking differences between the urban community networks and the rural community networks examined. On the whole smaller organizations tended

to be more optimistic about their work, whereas respondents from larger organizations expressed grave concern about the future of their organizations.

8.2.1 Successes of smaller community networks.

The energy and enthusiasm of many of the individuals involved in smaller organizations was almost palpable. Respondents were highly optimistic about the work of their organization, and enthused about the possibilities for their organization in the future. Most respondents interviewed had been involved with their community network since the formative stages, and were still very much involved on a daily basis.

In addition to the importance of this tight core of volunteers, respondents also emphasized the way they worked to bring people into the organization. Several smaller organizations reported that they held regular (usually monthly) meetings open to the public, rather than holding in-camera board meetings.

The Mount Arrowsmith Community Network, (MACN) for example, holds public meetings each month in the computer lab of a local school. The meeting is a time both for discussion about the work being done on the system and also a hands-on learning and training session. People have the opportunity to sit in front of one of the lab computers, connect to the community network and teach each other how to use the facility. Experienced users and long-time volunteers roam the room, trading tips and helping beginners get started. MACN respondents also noted that the meetings, which usually attract some 50 or so people each time, have a healthy mix

of regular stalwart volunteers and newcomers; in other words the meetings do not involve the same faces over and over.

There is thus an important social dimension to these meetings. The Parksville/Qualicum region served by the MACN has a large population of retired people, and MACN respondents mentioned that the community network meetings served as a kind of social club for many users of the system. Other respondents identified this as important. As one person involved with community organizing said, "You have to have fun. Otherwise it's like having the boss of the corporation with a group of salesmen saying they have to go out and sell more cars; that's no fun at all. You've got to have time for socializing; occasionally getting together and not having a work-related meeting." Interviewees also felt that holding regular informal meetings was very important to help connect faces and user IDs. Without that essential human dimension, it is all too easy to reduce human contact to words glowing coldly on the surface of a computer screen.

System planning was another area in which MACN respondents said that they tried to draw in as many views as possible. Rather than having a small group of programmers design and implement their main menu structure they deliberately attempted to open up the planning process by holding public sessions at their meetings. After an initial research phase, in which key volunteers examined the menu systems used by other community networks, a general brainstorming session was called. Volunteers were asked to throw ideas out to the group, and suggestions were written down on large sheets of paper. The design process was thus user-driven

rather than designer-driven. In fact, this process can be seen as being similar to the participatory design process developed in Scandinavia and championed in the US by organizations such as Computer Professionals for Social Responsibility.

8.2.2 Problems in rural communities.

It should be noted that the community networks studied were those which had achieved some measure of success, and that this should be taken into account in an examination of rural/urban issues in the field of community networking. It is apparent that many small community networks and community net organizing committees, particularly those in remote and mountainous parts of British Columbia, face enormous difficulties in getting online, simply because of the technical problems concerned.

In July of 1996 John Grogan, president of a small rural organizing committee in the small town of Valemount BC, (a town in the Rockies, close to Jasper, Alberta) posted a despairing plea for help to the Telecommunities Canada mailing list. All his attempts to secure a basic network connection to his community had resulted in a string of broken promises. "Just about volunteered-out!" he concluded.

One respondent, with a great deal of experience in telecommunications issues in remote areas, commented that many smaller communities, even those which were the successful recipients of federal CAP funding, would never be able to get online. How, he asked rhetorically, can a community without access to reliable electricity expect to get on the Internet?

The respondent was also critical of the federal plan to promote digital satellite dishes to rural areas, calling them “one-armed bandits.” His main criticism was the expense involved in operating such a dish. The technology is unidirectional in nature—users must place long-distance phone calls to send data the other way. The cost of these long-distance calls, in conjunction with the per-kilobit transmission rates of the satellite uplink technology, soon becomes prohibitively expensive.

These difficulties, the respondent continued, represent problems in more ways than one. There can easily be unrealistic expectations in a community about the difficulty in building a community network, and that the service will arrive soon. “And when it doesn’t people not only sour on the fact that you’re incompetent but they also sour on the concept that you’re pushing—the idea that putting community resources together and sharing bandwidth and providing affordable connectivity isn’t doable in that community.”

8.2.3 Difficulties with larger community networks.

Respondents from larger community networks did not report the same level of user participation as their small-town and rural counterparts. There was, in fact, a good deal of discontent expressed by some respondents that their organizations were becoming bureaucratic, hierarchically stratified and ossified. Some respondents expressed the view that the organizational structure of these larger community networks is itself a serious obstacle to increased community participation. Interviewees were, on the whole, much less enthusiastic than those from smaller community

networks, and a great deal of volunteer burnout was cited.

The larger organizations have a fairly formalized structure, with a small elected board and a large informal group of volunteers organized into functional committees. At least three respondents stated that they felt this kind of arrangement was, consciously or unconsciously, an attempt to replicate traditional hierarchical power structures of government or business, and that this promoted a rigid, bureaucratic structure that actually discouraged the active participation of volunteers. Avis, in his study of the Chebucto Community Net in Halifax, reports similar dissatisfaction among volunteers, and a sense that the forming of small cliques discourages volunteer participation. (Avis, 1995.)

Poor communications between the fairly small and isolated board of individuals, responsible for the decision-making process, and the volunteers, responsible for implementing those decisions, was cited by several respondents as a source of great frustration. This problem manifested itself both in terms of board members feeling that their policy directions were being ignored and no work was being done and volunteers feeling that board members were simply going to meetings, passing motions, ordering volunteers around and not doing much else. This was in sharp contrast to most rural community networks. Respondents there often noted that they received a good deal of direct feedback from their users in local cafes or the post office.

In addition to problems in the vertical structure of the organization some of the same respondents commented that horizontal communications between committees

was also a problem. This issue was described in terms of both uncooperative, territorial attitudes of committee chairs and a strong sense that volunteers in one committee had no idea what was being done in another. In fact, given that community networks are meant to be tools for enhancing discussions and communications, this latter was seen by some respondents as a particularly disappointing irony.

This kind of organizational difficulty was suggested by some of the individuals interviewed as being related to the high volunteer turnover rate of the larger organizations. Vancouver, for example, has just one current board member of 15 who was involved at the earliest stages. By contrast Campbell River's founders are still the key individuals behind the organization. One serious consequence of this highly transient nature of volunteer involvement is impaired development of any kind of long-term organizational memory. It becomes difficult to sustain a coherent and cohesive group vision if the volunteers of today are a different group from the volunteers of a few months ago.

For instance, unlike the popular monthly meetings held by MACN, the Vancouver CommunityNet has held just two social gatherings for all of its volunteers since it came online in September of 1994. Many volunteers with the organization express a sense of isolation and a feeling that they had no way of finding out what was happening in other parts of the organization.

This kind of problem with the slow growth of hierarchical structures does not appear to be unique to community networks. *The Citizens Handbook*, subtitled 'A guide to building community in Vancouver' and published by the Vancouver

Citizen's Committee, offers the view that "In an attempt to become legitimate, many small groups decide they need more structure. Unfortunately, this can lead to spending more time on the needs of the organization than on the reason for getting together." It adds that "Grassroots organizations seem to work better with a flat structure as free as possible of boards, directors, and chairs." (Dobson, 1995, p. 47.)

It should be noted that not all respondents shared this view of hierarchical organization as inherently problematic, however. Some respondents felt that hierarchies were a good working model for large organizations like many community networks if administered properly. They also felt that many volunteers were happy to work in such structures, as it implied a certain degree of guidance, leadership and direction for the volunteers' efforts.

Nevertheless, this contrast between smaller organizations in smaller communities and the larger community networks in big urban centres may simply be an inevitable and unfortunate consequence of the social dynamics of population size. Some form of organization is necessary, for example, to satisfy the requirements of provincial governments if an organization wants to be registered as an official non-profit society. Similar concessions may need to be made by a group in order to be eligible for funding from government, foundations and grant agencies. The question of who can speak publicly for an organization and who cannot is of great importance, especially in terms of media relations. There is always the need to strike a balance between those rules designed to restrain loose cannons and those which discourage other volunteers for speaking freely. And as large organizations grow there

is increasing pressure to hire staff in order to meet the demands of users.

8.2.4 Staffing of organizations.

The hiring of staff is an important turning point in the life of any non-profit organization, as certain inescapable financial commitments then come into effect. In addition, the presence of paid staff can result in tensions in a volunteer organization. In an examination of the transformation of worker-owned collectives, Katherine Newman notes that “Structural differences between . . . volunteers and the full-time staff emerged very gradually, but eventually succeeded in undermining the egalitarian process of decision making that had obtained prior to the development of external financial dependencies. Serious conflicts developed between the prevailing ideological commitment to egalitarianism and the actual practice of decision making that was beginning to emerge at this stage in the ‘life cycle’ of the collectives.” (Newman, 1980.) Similar issues can be seen in the non-profit volunteer organizations that run community networks.

In addition to ideological conflicts one respondent from a community network that had hired full-time staff reported that tensions resulted from personality issues that stemmed from the hirings themselves. According to the respondent there was some resentment from some long-time volunteers when they were not hired by the organization, even though they were not entirely suited for the positions.

Respondents in smaller communities expressed the opinion that problems resulting from organization size was an unavoidable problem faced by larger groups.

A common theme reported by interviewees in rural areas or small towns was that their small size was a significant factor in their favour in terms of organizing a working group of volunteers. They were able to get things done in large part because the small size of their catchment area meant they knew with whom to talk and people were pleased to work together. Although parenthetically one respondent with a small community noted a disadvantage to this sort of 'everyone knows you' factor; technical volunteers found it frustrating to receive several phone calls an evening from local users wanting help.

Small community respondents also expressed a good deal of pride in the friendliness and cooperative spirit of their community compared to what they saw as being the indifferent or even hostile anomie of the big city, though this may have reflected personal opinions towards urban living.

This difference between the two scales of community networks can also be seen as a classic example of the distinction between *Gemeinschaft* and *Gesellschaft*. If the smaller community networks, with their closely-knit strong organizations can be seen as community, or *Gemeinschaft*, then the larger community networks with their transient populations in rule-based organizations can be seen to resemble society, or *Gesellschaft*.

8.3 III — Inherent qualities of online discourse.

A critical question that frequently goes unasked in the area of community networking is whether or not there are any qualities of the systems themselves which may be

detrimental to the goal of enhancing community. In fact, it generally seems as if the alleged benefits of CMC as a whole are taken uncritically as an axiomatic given by its users. Light comments that:

The kinds of hype being fixed on computer-mediated communications have analogs in the technological utopian literature published in the United States during the late 19th and early 20th century. This literature portrayed technological advance as central to achieving social perfection. Nearly a century later, the confident expectation that new technologies will improve society – that technology equals progress – persists. Proponents of a kind of good-faith technological determinism, cyberoptimists believe new communication and information technologies will automatically generate good ends as a matter of course. Yet as yesterday's tomorrows – past visions of the future – demonstrate, early predictions generally fail to anticipate the complex implications of inventions. (Light, 1996.)

Although it was not one of the set questions of my interview, I did ask several respondents if they felt whether CMC in general had any detrimental aspects in terms of inherent problems that might interfere with community enhancement. Most seemed a little surprised by the question. One commented:

I know of some community networks that haven't taken off. I don't know of any community networks that have been damaging to community. They might be *irrelevant* to community. But to me they're either successful in terms of enhancing the quality of life in community or they're not successful as community networks. I don't see the initiative as damaging to community.

This positive assessment of the technology is not shared by all, however. Winner asks:

Will digital media sustain healthy attachments to persons both near and far away? Or will distance foster insouciance, resentment and mutual contempt? Mid-1990s Internet news groups, for example, certainly do not resemble the kinds of interpersonal respect, civility and friendship that traditional, geographically based communities require. (Winner, 1995.)

There is a good deal of evidence to support this grave concern. Social interaction over CMC, at present almost entirely text-based, is very different from what online aficionados jokingly refer to as 'F2F' or 'face to face' communications in real life. The basic lack of normal social cues in an online context leads to some unexpected, and sometimes seemingly paradoxical, consequences.

These consequences point to the importance of examining the nature of online discourse itself. It is quite possible that what might be described as chaotic individualism may be deliberately undermining the potential for community dialogue. Community networks may need to examine this question with the aims of developing more of a consensus as to the social mores appropriate for online communications.

8.3.1 Positive aspects of online discourse.

On the one hand reduced social cues can break down barriers of social status and hierarchy, resulting in the possibility for far more egalitarian and open communications processes. Many online users report that reduced social cues can lead to a greater intimacy and honesty in conversation. (We, 1995.) The increasingly common

tales of people meeting romantic or life partners over the Net is a testimony to this quality of online discourse. People often find themselves engaged in surprisingly intimate conversations with virtual strangers, in a way they might never do in real life.

As Reid notes, "Freedom is given, either to be someone whom you are not, or to be more yourself than would usually be acceptable." (Reid, 1991.) Thus shy, introverted or unattractive people may be particularly drawn to online relationships. Without ordinary social cues brought about by physical presence, people are judged more by their ideas, their writing, the written projection of their personality than their looks.

An extremely popular New Yorker magazine cartoon of recent years, that has appeared in books and on office doors around the world, shows a dog happily seated before a computer and commenting to its friend that "On the Internet, nobody knows you're a dog." Similarly, nobody knows that you're self-conscious, blonde, overweight, outgoing, black, elderly, muscular, in a wheelchair, tall, beautiful or blind. What matters is your writing. (although gender and ethnicity can come through unless a person deliberately chooses a false name.) In addition, people tend to behave differently towards others when such cues do not exist, what Reid calls "reduced self-regulation." (Reid, *ibid.*)

Online there is thus the potential for support mechanisms that might not be possible otherwise. Individuals dealing with mental or physical illness might talk with others anonymously about their condition, whereas in real life they could have great

difficulty admitting their feelings to others. A gay, lesbian or bisexual teenager growing up in an isolated area might feel a strong sense of social isolation stemming from his or her inability to talk to anyone else about his or her ongoing sexual discovery. But online the same person might find a supportive environment of peers, willing and able to share common experiences. Such individuals may be openly out of the closet online, but very much in the closet in everyday life.

This type of partial social levelling might also contribute to the successful bringing together of people with common interests. For example, there are many popular software products available for free over the Internet that were written by collaborative teams of computer hackers, most of whom have probably never met in person. These labours of love range from simple small utilities to enormous projects like Linux, a full UNIX operating system that rivals commercial products, written by a Finnish university student and legions of his online associates in their spare time.

Similarly, the Usenet newsgroup 'rec.arts.int-fiction' acts as a forum for fans of interactive fiction, a fairly obscure and commercially extinct form of computer game. With its narrow focus on a specific field, the group maintains a friendly atmosphere, with hobbyists from around the world trading ideas and pieces of software that they have written. Common discussions draw upon eclectic knowledge of very disparate fields, from linguistic research into parser disambiguation to the moral choices of fictional characters to the best kinds of puzzles to include in a game.

Instances such as these are frequently cited by online advocates as being cases of convivial cooperation that would have been impossible without the openness and

free flow of ideas that the Net makes possible. At least two respondents interviewed said that they were inspired by these kinds of successes in group-oriented volunteerism to become involved with community networks.

8.3.2 Negative aspects of online discourse.

But on the other hand, these less inhibited conversations are accompanied by a much more problematic and troubling trend, as Winner notes above. Many online fora are defined, not by open and honest conversations, but by astonishingly hostile and verbally violent exchanges. Sproull and Kiesler theorize that this tendency may be linked to the concept of deindividuation, whereby people in anonymous or large group settings may feel less inhibited by normal social mores. (Sproull and Kiesler, 1992, p. 50.) In fact, so common is this problem that an entire vocabulary has developed to describe some of the most frequently seen anti-social behaviour in Usenet discussion groups.

Flames. A flame is simply a message posted as an insult. It might be a general complaint (eg.: 'they flamed the provincial government.')

or a specific attack against another Usenet post (eg.: 'he posted a follow-up flame to her message about abortion.').

Flames are usually rude knee-jerk reactions, and are frequently *ad hominem* attacks against another Usenet poster. As Sproull and Kiesler comment, "Electronic messages are often startlingly blunt, and electronic discussion can escalate rapidly into name calling and epithets." (Sproull and Kiesler, 1992, p. 49.)

'flame war' is a vociferous, and usually utterly pointless, argument on a newsgroup or mailing list.

Trolls. A troll is a deliberately provocative post, designed to annoy or anger the target audience. A troll can be both a message and the person who posted it. A typical troll might involve going to a feminist newsgroup and posting a remark about 'feminazis' or going to a rifle-owners newsgroup and commenting on all the 'gun nuts.' A less overt troll might be to go a newsgroup and ask an almost legitimate question, posing as a naïve user. The poster then sits back and apparently enjoys the flamewar that ensues. 'Flame bait' is a roughly synonymous concept—a message intended to provoke flames. The term derives from the mixed metaphor of 'fishing' for flames.

Spams. In Usenet parlance, a 'spam' is a message widely cross-posted; sent to many groups simultaneously. The target newsgroups have nothing to do with the subject of the posting, and the individual posting the message frankly does not care. He or she is simply interested in reaching as many people as possible, regardless of the inconvenience this may cause to others. Most spam is commercial in nature.

Spam is deeply resented by Usenet oldtimers, who view it as the work of unscrupulous individuals exploiting a system based on the trust and good judgement of its users. After all, if everyone spammed indiscriminately then the entire system would collapse under the cacophony, and nobody would be able to talk about anything. In

an attempt to combat the problem some Usenet users have set up their own vigilante cancelling programs, such as the whimsically named CancelMoose, which are used to cancel spammed messages.

The term 'spam' derives from a characteristically absurd Monty Python comedy sketch of the same name. In the sketch a chorus of Vikings, boisterously singing the name of the commercial tinned meat product over and over, drown out conversation in a restaurant. The term is applied by analogy to irrelevant cross-posted messages which drown out any hope of intelligent discourse in newsgroups.

Invasions. An invasion, or raid, occurs when a group of online hooligans decides to go and 'take over' another newsgroup by provoking a flame war, in order to anger others.

A particularly well-known case occurred in March of 1993. It involved a small group of regulars of the Usenet newsgroup 'alt.tasteless' who decided to target the newsgroup 'rec.pets.cats,' knowing that the latter was frequented by earnest cat-lovers; many of whom were women. The alt.tasteless invaders came in and maliciously posted a large number of trolls and flames involving the abuse of cats, (eg.: cat recipes) disrupting the conversations and angering long-time readers of the group. (Quittner, 1994.) When confronted, the invaders, mainly male university students, argued that they had the right to free speech, and that the regulars of the newsgroup could not infringe on that right by dictating what they could or could not say.

While it may be easy to dismiss this case as simply the childish antics of some rather mean-spirited pranksters, it does point to a much more serious issue. Society has, over the years, developed various methods for inhibiting grossly antisocial conduct. These methods may range from unwritten social inhibitors reinforced through behavioural patterns to strictly codified legal procedures. However, many of these methods break down in the online world. What will evolve to serve as formal and informal agents of social control online? Who has authority in cyberspace, where physical borders are largely irrelevant? How will community networks, which ostensibly promote convivial exchanges of understanding, be involved?

These are not abstract questions, by any means. Already the issue of online hate literature, and the ease and anonymity with which it can be rapidly disseminated, is of great concern to many people involved with community networks. Several respondents mentioned that, legal liability aside, they had grave concerns over the tensions between promoting free speech and undesirable social consequences of hate literature.

8.3.3 bc.general.

A typical example of some of these concepts can be illustrated by a brief examination of the main Usenet newsgroup for British Columbia, known as 'bc.general.' This newsgroup was formed in order to provide a general forum for discussing events in the province, and is marked by constant, bitter and highly polarized feuds over controversial social issues as immigration, welfare and government employment

programs, bad drivers and the nature of homosexuality. Far from encouraging a degree of civil discourse and understanding, the newsgroup frequently appears to be little more than a cesspool of some of the worst forms of human bigotry. As Stoll remarks concerning Usenet in general,

Online debates of tough issues are often polarized by messages taking extreme positions. It's a great medium for trivia and hobbies, but not the place for reasoned, reflective judgement. Surprisingly often, discussions degenerate into acrimony, insults, and flames. (Stoll, 1995, p 32.)

The following table shows a breakdown of postings (messages) in the Usenet newsgroup bc.general, as available from the Vancouver CommunityNet²⁴ on June 4, 1996.

²⁴ — Usenet is a distributed system and messages take time to travel, or propagate, from one site to another. Therefore the given set of messages available on one system at any given time will not necessarily be identical to a set on another system. The differences are attributable to propagation delay.

Number of Posts	%	General topic area
74	29.7	Recent provincial election.
29	11.6	Asian immigration.
27	10.8	Cross-posted commercial spam posts.
23	9.2	Gay/lesbian issues.
23	9.2	Complaints about poor drivers.
22	8.8	Criticisms of various federal government policies.
14	5.6	<i>Ad hominem</i> flames of other posters.
10	4	Miscellaneous.
7	2.8	Local Internet service providers.
5	2	Local 'for-sale' or 'wanted' notices.
4	1.6	Cycling issues.
4	1.6	General ideological debates.
3	1.2	Local labour dispute.
2	0.8	Miscellaneous information sought.
2	0.8	Announcements of local events.

Table II — Summary of posts to the newsgroup bc.general, June 4, 1996.

There are several points that should be made regarding this table. First, it is not statistically valid data, but in my judgement is a fairly typical spread of discussions in the newsgroup. The one exception is that the number of posts related to provincial politics is unusually high owing to the recent provincial election.

Second, this breakdown does not give a good sense of the extremely polarized and abusive nature of the discussions. For example, typical subject headings for discussions of Asian immigration read "We dont (*sic*) want any more immigrants!",

“Canadians discrimination (*sic*) against Canadians” and “Bad Drivers in Vancouver (was Re: Asian immigration.)” Typical subject headings for discussions of gay and lesbian issues read “Queer rights—selective approval of perversions”, “Homosexuality IS A CHOICE” and “HOMOPHOBIA IS A CHOICE”. The headings alone do not suggest balanced or reasoned debate.

Third, the discussions frequently involve personalized and *ad hominem* attacks. In fact, 14 posts alone represent verbal debates about online personalities that would, were they in regular print media, likely constitute libelous character assassinations. The discussions about Asian immigration and homosexuality frequently involve similar attacks on other posters.

The newsgroup also features a handful of individuals who use it as something of a personal forum or soapbox from which to expound their views. One community network user posts several inflammatory messages a day attacking Asian immigration, another writes regular essays (bordering on polemic diatribes) on conservative political topics, and so on. Naturally these individuals are then targets for personal attacks because of their views.

Fourth, a large number – ten percent – of the total posts are spam posts and their follow-ups. In other words they are messages cross-posted at random across Usenet as a whole. These frequently originate from US sites, generally promote mail-order companies or pyramid money schemes (eg.: the infamous ‘Make Money Fast!’ posts that proliferate on Usenet like a scourge) and thus have nothing whatsoever to do with BC at all. Spam messages inevitably generate a flood of follow-ups of people

bitterly complaining about the original spam.

The climate of bc.general could be summarized in this comment by Ann Travers, in her detailed analysis of discussions on the NCF's main Usenet newsgroup:

The tone of discussion on contentious issues (and discussions of race, gender and sexuality are always contentious) is almost entirely polemical. Critical dialogue is virtually absent from these conversations. (Travers, 1996.)

8.3.4 Online Harassment.

In addition to these types of verbal attacks, other forms of harassment are commonplace. Many women, for example, report that they are frequently find themselves the target of unwanted attention or sexual harassment from men when online. (We, 1993.) As Shade writes, "as many women have found out, cyberspace is not a gender-free space." (Shade, 1993.) Given that a large number of male users are university students or teenagers, and given the absence of social cues or inhibitors mentioned earlier, this may not be entirely surprising. However the frequency and bluntness of the harassment can be quite remarkable.

Online chat systems, whereby people can send messages to one in another in real time, usually anonymously, are particularly prone to this kind of problem. As a brief experiment I once configured two IRC (Internet relay chat) connections from two different systems to look like two different people. I named the two connections conventional male and female names—one 'Richard' and the other 'Susan.' (both real name and nickname was set, along with non-existent email addresses.)

I then put my alter-egos Richard and Susan onto a variety of non-sexual channels, silently moving them around together over a period of three hours, logging any unsolicited messages sent to them. During that time Richard received no such messages, but Susan received messages from five individuals. These private messages ranged from the relatively innocuous (“Hi.”) to the irritating (“R U Male or Female???”) to the bluntly sexual (invitations to ‘netsex,’ or exchange sexual fantasies). The messagers were also often very persistent, sometimes sending more than one message despite a complete lack of response.

This is not a comprehensive survey by any means, but is consistent with anecdotal reports from female users, even those who frequent more restrained environments than IRC. And it points to an important question: to what extent does such online harassment discourage women from participating in online discourse? Herring, following a study of two online mailing lists, writes:

. . . I have argued that women and men constitute different discourse communities in cyberspace – different cultures, if you will – with differing communicative norms and practices. These cultures are not however “separate but equal”; rather, the norms and practices of masculine net culture, codified in netiquette rules, conflict with those of the female culture in ways that render cyberspace – or at least many “neighborhoods” in cyberspace – inhospitable to women. (Herring, 1994.)

Online harassment is a serious issue because of the way in which it leads to the curtailing of participation by certain groups; women in this case. Travers writes:

Participation by women is often effectively discouraged (by online harassment). It is important to interpret sexual harassment as not solely about male sexual behaviour towards women but as a gate-keeping device that limits the extent to which women are able to participate in social spaces, including cyberspace. (Travers, 1996)

Participation assumes both social climate and technical access. It is difficult to determine a reasonably accurate demographic breakdown of who has net access, and who has not, but a survey by O'Reilly & Associates in the US in October of 1995 indicated that $\frac{2}{3}$ of their survey group were men. (O'Reilly, 1995b) A similar survey of users of the World Wide Web indicates the same general gender ratio of 2:1. (Pitkow and Kehoe, 1996.) Surveys of community networks indicate an even more prominent gender skew in favour of male users. The 1995 Industry Canada survey of the NCF found that 81.8% of their respondents were male. The same survey notes that "The study of Cleveland Free-Net users reported 83% males, while the Digital City data showed 91% males." (Patrick, *et al.*, 1995. Schalken and Tops, 1994.)

There is evidence to suggest that this gender imbalance is shifting slightly towards more balanced representations over time. There are also other factors to consider. Turkle comments that "Women who get onto the Net are often turned off by the flaming and the *ad hominem* rudeness they see. But they find places on the Net where this is not the case, and when they don't find them, they can create them." She also adds that "Women tend to be less visible than men because when confronted with a rowdy group-flame session, women will move their conversations to private email." (Turkle in Brody, 1996.) It is possible, therefore, that women's use of CMC technology is more significant than it first appears, because women may

prefer to maintain semi-private email discussions with circles of friends rather than engage in high-profile flame wars in newsgroups and other fora.

However, given that community networks aim to encourage the participation of as broad an audience as possible, the fact that women may be subject to regular harassment is an important issue that calls for further study, as is the question of why women are so under-represented in community network demographics.

8.3.5 The net as a social insulator.

It seems that the technology, by serving as a kind of social insulator, may serve to enhance antisocial behaviour, such as insulting strangers or harassing women, that would generally not be tolerated in ordinary social situations. Early users of CMC recognized this fairly quickly. An introductory online help document, written by pioneering Usenet users and aimed at novices, begins with the reminder "Never Forget that the Person on the Other Side is Human." (Von Rospach *et al.*, 1996.) That such an admonishment was deemed necessary at all is indicative of some of the problems experienced by online users. But the advice frequently goes unheeded, and this has important implications for any attempt to use CMC technology to foster or engender local discussions. Is a medium so prone to flames and trolls really appropriate for achieving this goal?

There seems a modest amount of evidence to support the contention that online discussion systems are successful when online discussions are relatively narrow and focused. However, discussions in real communities are not narrow and focused.

They are broad, contentious and represent a multiplicity of conflicting views. It is unclear whether discussions in such a context work effectively in the online environment. One respondent commented on some of the difficulties with organizing social activism using online tools, saying:

Certainly three or four years ago I don't think there were as many people with a social activism bent who were as familiar with using the technology as people in the technical fields, who were using it all the time. So that's one aspect of (why social activism online may be less successful than purely technical work)—the people involved in social activism probably just weren't as familiar with it. As time goes on that might change.

But also the nature of technical work is that you have a specific task, you do it by yourself somewhere, present the results to the group, then if it meets the criteria it gets integrated in a whole. But there seems to be more room for discussions that wander inside of a social activism context. It's also the nature of those social discussions themselves—they don't lend themselves to concrete action.

8.4 IV — Communications technology: a Faustian bargain?

Finally, there is the question whether CMC itself brings with it the risk of increased technocratic control over human discourse; whether values of individual access, freedom and control are undermined by the inherent qualities of the electronic medium.

Various commentators have noted that many forms of complex technology necessarily impose certain conditions upon the user. Therefore any evaluation of the

technology must weigh this inevitable and highly significant disadvantage against all other advantages that it might confer. It can be argued that networking technology imposes such conditions upon its users, creating a form of Faustian bargain, one that can be quite socially damaging. For example, Postman argues that computer technology brings with it the “fundamental metaphorical message . . . that we are machines—thinking machines, to be sure, but machines nonetheless.” The technology also “subordinates the claims of our nature, our biology, our emotions, our spirituality.” (Postman, 1992, p. 111.)

Additionally he argues that the wholesale adoption of electronic communications technology has helped increase the growing and massive flux of meaningless data that daily surrounds us; information free of any human or social context. The resulting reliance upon experts to process and digest this data also means that society then begins to seek bureaucratic, technical solutions to human, social, problems. Bureaucracy “now claims sovereignty over all of society’s affairs.” (Postman, 1992, p. 86.)

8.4.1 Networking technology as democratic — some criticisms.

Already we have seen that networking technology is proving to be considerably less inherently democratic than its early proponents have argued. This underlying issue of the technology has many aspects. One article of faith among many advocates of Internet-style communications technology, for instance, is that the network is distributed amongst autonomous nodes rather than being structured in a central-

ized, hierarchical form. The result, the argument goes, is a necessarily uncontrollable and thus democratic system. As John Gilmore once remarked in a much-quoted and celebrated comment, “the Net interprets censorship as damage and routes around it.” (Gilmore in Rheingold, 1993, p. 7.) Many people have also argued that this decentralized nature of the Internet stems from early military research into non-hierarchical communications networks that could survive a nuclear attack by not relying on centralized and thus easily obliterated hubs. (Sterling, 1992.)

This attractive but simplistic vision of the technology overlooks an important fact: those individuals and organizations in power do not particularly want to lose their power, and will go to great efforts to adapt any new technology to their own needs. They will also, quite naturally, attempt to undermine any technology they consider to be a threat to their own interests.

For example, the question of who controls the US domain name space is of great concern to online activists. Despite the common assumption that the Internet is highly decentralized in structure, all top-level domain names²⁵ in the United States are currently controlled by a single organization—the InterNIC. Formerly administered by the National Science Foundation, (NSF) an independent US government agency, the InterNIC is now run by two private corporations under contract to the

25 — Domain names are the short hierarchical and usually mnemonic names by which individual machines on the Internet can be identified. For example, the Vancouver CommunityNet’s Internet domain name is ‘vcn.bc.ca’. The hierarchy reads from left to right, from ‘Vancouver CommunityNet’ to ‘British Columbia’ to ‘Canada.’

Domain names in Canada are thus geographical in nature. However in the US domain names are usually organized by functional grouping, not by geography. Commercial sites end in ‘.com’, US government sites end in ‘.gov’, educational institutions such as universities end in ‘.edu’, and so on. Confusingly, many Canadian sites choose to register their Internet names with the US rather than the Canadian naming authorities, so a functional Internet name is no guarantee that the site is American.

NSF. One of these companies is AT&T, the telecom giant, and the other is a company called Network Solutions, Inc. (NSI). In mid 1995 NSI was acquired by Scientific Applications International Corp. (SAIC), a US \$2 billion firm that specializes in military, police and government intelligence contracts. And, as Stephen Pizzo points out:

SAIC's board of directors is a veritable who's who of retired defense and intelligence officials. Current board members include:

- Admiral Bobby Inman, former National Security Agency head and deputy director of the CIA,
- Melvin Laird, defense secretary under President Nixon,
- Retired General Max Thurman, commander of the Panama invasion,
- Donald Hicks, former head of research & development for the Pentagon, and
- Donald Kerr, former head of the Los Alamos National Laboratory.

Recently departed from SAIC's board:

- Robert Gates, former CIA director (left in 1994 to join TRW's board),
- William Perry, the current secretary of defense,
- John Deutch, the current CIA director, and
- Anita Jones, Deutch's procurement officer when he was at the Pentagon. (Pizzo, 1995.)

There have not been any allegations of SAIC misusing this control, but as one commentator remarks, "at the very time the Internet community is struggling with the issues of encryption and privacy, I'm more than a little uneasy to find this bunch

of ex-spooks sitting at the very entry point of the Net.” (Warren in Pizzo, 1995.)

More significantly, some critics have argued that the shutting down of the academically-oriented NSF network backbone and the resultant handing over of control of the US Internet to commercial networking companies on April 30, 1995, has resulted in a gradual increase in centralized control over the Internet name space. This highly esoteric technical issue serves to undermine the notion that the Internet is inherently democratic and decentralized, because control over name and IP number space translates directly to control over access to the system as a whole. Anyone can pay a commercial provider for network access in order to plug a computer into the Internet, but unless that computer’s address is recognized by the central name authorities for their namespace then nobody will be able to find it. As Gordon Cook notes: “It is beginning to appear that, the more the Internet increases in size, the faster that power flows upwards into the hands of a few who, since they are both operators and rule makers for the commercial Internet, would find themselves singled out for accusations of blatant conflict of interest in most other situations.” (Cook, 1996.) Some companies have tried to set up alternative name registries to the InternIC and national name registrar monopolies, but whether such ventures will succeed remains to be seen.

8.4.2 Vulnerability of CMC Technology.

Of course, these notions of decentralization of the net mentioned above are manifested solely at the macro, or network level. At a micro level – the level of the

individual machine or user of that machine – the technology could not be more centralized. The system administrator of a typical multi-user system (ie.: a computer used by more than one person) ultimately has total control over the activity of the users of the system. Concerns over this type of control prompted some respondents to complain that they felt their community network was, at the very least, driven by the technical directors of the system or, at the very worst, held hostage by those administrators.

8.4.3 Centralized control on UNIX systems.

From an outsider's point of view the power and trust solidified in the hands of a multi-user computer's system administrators can be astounding. For instance, most Canadian community networks are based around a computer operating system known as UNIX, which is a powerful and flexible multi-user system popular in the worlds of engineering and academic computer science. UNIX is used because popular microcomputer operating systems, such as MS-DOS or the MacOS, are designed for single-user applications and cannot handle the management of thousands of user accounts. But UNIX's power comes with at least one price. On such a computer, a person with 'root' access – a metaphor derived from the root of a tree – has absolute and unequivocal control over that system. He or she can read any file on the system, create or delete any user account, and so on. And many critical day to day functions on the system can be accessed and controlled solely by a person with root access.

There are many technical arguments why this type of system design is a require-

ment for such a multi-user computer. These arguments usually boil down to a conclusion with which Plato would have been very pleased: that the system necessarily requires a strong captain because, like a ship at sea, it would founder if its users were to be given too much individual power.

This centralized control structure has at least two serious consequences. First, the systems are extremely vulnerable to the depredations of even moderately skilled intruders. A computer vandal who manages to obtain root access to a community network through exploiting a weakness in the system can wreak complete havoc. In fact, in UNIX a single cryptic command²⁶ when issued as root will permanently delete all of the files on the system. A more skilled systems cracker could rig all manner of hard-to-find trapdoor programs that would be difficult for all but a highly experienced systems administrator to detect and eradicate. As community networks generally rely on volunteer system administrators working in their spare time, this inherent system fragility is obviously a great worry to network organizers.

This is not a purely theoretical concern. In 1994, for example, the Greater Detroit Free-Net's system was attacked and temporarily disabled by a 15 year-old boy in Minnesota. (Paul Raine, Greater Detroit Free-Net, personal communication, 1996.) Even simple equipment failure can have a devastating effect. As noted earlier, in 1994 the Victoria Free-Net's primary hard drive failed, taking it out of commission for six weeks. This problem was not caused by maliciousness on the part of any intruder, but by simple bad luck, and points again to the vulnerability of highly

²⁶ — `rm -rf /`

centralized systems with single points of failure. (ie.: a point of potential failure with no redundant backup capacity.)

Failures of this kind affect large commercial operations as well. In June of 1996 Netcom, a giant American ISP with 400,000 customers, suffered a network-wide outage for over 12 hours. Company officials blamed the outage on a single line of incorrect code in a single network router. (Bray, 1996.) AOL went down for an entire evening in September of 1995 and 19 hours in August of 1996 owing to problems with newly-installed software upgrades, cutting off several million customers each time. (Associated Press, 1995a. CNET, 1996.)

Second, it means that the system is completely at the mercy of the system administrators' good will and reliability. The departure of a volunteer system administrator could pose serious problems for an organization. As one respondent with a rural community network wryly noted, "If (our two key sys-admins) were hit by a bus tomorrow, we'd have to shut down." Volunteers with the highly specialized knowledge needed to run a modern computer-based information service are difficult to find, especially outside urban areas. One respondent noted that, in his opinion, finding technically skilled volunteers with both a social conscience and an interest in volunteering was particularly difficult.

Just as seriously, any uncooperative system administrator could jeopardize the workings of the system, by deliberate obstruction or simply through inaction. One respondent was highly critical of certain technical volunteers with his organization, angrily remarking that "There were one or two people that had control of the

operating system and their priorities weren't necessarily the priorities of the rest of the board. And I never felt that there was a collegial arrangement as much as a mutual tolerance, because there were no other options."

8.4.4 Access to multi-user systems.

A slightly less extreme case than threats to the entire system involves the granting of write access privileges to the computer. (ie.: the ability to write, or modify, certain types of data on the system, not just the ability to view or read it.) Several respondents felt that a highly protective attitude of system administrators on their community network, prompted by very real concerns over the fragility of the system, resulted in a bottleneck of system access. This is not just a criticism for contemporary community networks. Schuler writes that Community Memory, one of the earliest experiments in community networking, was marked by a similar downfall. He comments:

This lack of involvement or investment on the part of the community members not only created a bottleneck for Community Memory staff and volunteers but it helped prevent the type of community *ownership* that is key to Cleveland Free-Net founder Tom Grundner's vision and is demonstrated by volunteers at community networks all over the world. (Schuler, 1996, p. 60.)

In addition to citing a problem of work on the system being obstructed by 'the techies,' some non-technical respondents complained about condescending or

intimidating behaviour from system administrators. This may be in keeping with the priesthood and acolyte mentality that seems to surround institutional computing to this day. Computer culture has long been characterized by a certain disdain for non-technical users, (Levy, 1984) and a resistance on the part of system administrators to work with people from outside that culture can be seen as part of that tendency. As *The Jargon File*, a definitive compendium of computer programmer jargon also known as the *New Hacker's Dictionary*, drily notes: "The users (of a given computer system) are looked down on by hackers (computer experts with a passion for and a mastery over the technology) to some extent because they don't understand the full ramifications of the system in all its glory." (Raymond, 1996.)

Three respondents also expressed great concern over the social skills of the technically obsessed, suggesting that basic problems with social interaction led to conflict within the group. One respondent went so far as to say that "Personally my own experience is that people who are working on the Internet and around (computer) technology are some of the more socially incompetent people I've ever met in my life—and in a scary kind of way. The Internet has appealed to those people who, in some respects, don't like social contact."

It should be noted, however, that this tension and sometimes outright antipathy is often quite mutual. Technically-oriented respondents reported their frustration with having their informed decisions overruled by boards which had no understanding whatsoever of the complex technical issues involved. They complained about being asked to implement system features that they considered to be utterly pointless

and having to spend large amounts of time explaining elementary system facts to their fellow volunteers. They also found it frustrating when largely non-technical boards would tell them not to install technical features that they considered interesting or useful. Unfortunately, these kinds of tensions likely reinforce the kind of 'us versus them' mentality already well established in computer science and technology circles.

In conclusion, that online communications is necessarily or even just generally open and democratic in nature appears to be an unexamined assumption held by many involved in community networks. Yet there is evidence to suggest that the technology is not necessarily as democratic as its proponents would like to believe. Is this issue one that can be ameliorated or eliminated simply by better planning and a redesigning of problem areas of technology? Or is it an inherent limitation of CMC technology in general that must be worked around as far as possible?

8.5 Conclusion.

In summary, there are a host of problems – both internal and external – facing community networks today. Some are very clear in nature—funding, for instance. Other problems are related more to unexamined assumptions of the underlying technology itself. All of these problems point to increased uncertainty about the community networking movement as a whole. Some of these issues will be addressed in the concluding chapter.

Chapter Nine — Conclusion.

9.0 Introduction

Although community networks may hold potential for building a non-profit community-owned and controlled space in the online world, it is not clear whether they hold similar potential for community building in the real, physical, communities in which they are based. My findings suggest, in fact, that they do not hold such a potential, and that the volunteers who run the networks do not consider community building to be a major priority for their organizations. The remainder of this chapter consists of an examination of some of the future directions of community networks. It also proposes several areas of possible future research.

9.1 Future directions of community networks.

Community networks today are at a crossroads. Their early days were characterized by tremendous optimism and enthusiasm. Remarkably capable systems were built up in short periods of time, and volunteers had high estimates for their potential for community service. Many felt that their work was, in a sense, of such great importance that the emergence of community networks was inevitable. Cleveland Free-Net founder Grundner, in an oft-repeated quotation, has said that “We cannot imagine a 21st Century which does *not* have free public-access community computer systems, just as our century had the free public library.” (Grundner in NPTN, 1993.)

However, it has become apparent that community networks are not going to happen by themselves, and mere enthusiasm is not enough to keep the movement alive. Many respondents report that their organizations are in the midst of a serious rethinking of their very purposes and goals. It is perhaps a little early to draw conclusions from these exercises in organizational soul-searching, but certain issues must be resolved if any measure of success is to be realized. Some of these issues include:

- Internal consensus. The need to improve communications within the organization as a whole.
- Community needs. The need to study the actual needs of the community; what abilities the organization's user base wants. Also an examination of how these needs can be met by community networks.
- Financial costs. Addressing the question of what funding sources community networks should rely on in the future.
- Provision of dialup. A study of the nature of dialup access.
- Changing technologies. What present and technical systems should be adopted in the future, and what impact will such technologies have? (eg.: PPP or SLIP dialup access.)
- The development of local information content.
- Defining attainable goals. Defining achievable short-term goals.
- Training. Addressing training needs and goals.
- An examination of the technical capacities and limitations of CMC in general.

9.1.1 Internal consensus.

One of the more unfortunate aspects of community networks today is that their internal organizations are often characterized by a certain amount of disagreement over the future directions and goals of the organization. This is particularly ironic given that the networks are intended in part to promote harmonious discussions within the local community.

It is clearly impossible to expect that everyone in a non-profit organization is going to be in full agreement about everything. Indeed, a certain level of dissent adds a healthy tension to an organization. Additionally, there are going to be great differences in outlook and priority from one community network organization to another. What works well in one locale does not necessarily work well in another.

Nevertheless, I believe that the most critical task ahead for community networks today is developing some form of general consensus concerning their collective future. Given their limited resources, community networks cannot be everything for everyone. It is crucial that the general goals and priorities of each organization be articulated more clearly.

9.1.2 Community Needs.

Although a close examination of user wishes and needs is an integral part of any marketing exercise, it appears that community networks have not undertaken similar care to examine the needs of their users, the community. This is understandable,

given the cost in resources of extensive surveys and the fact that community network systems are usually overloaded to capacity. But it is nevertheless an important question: who is being served, and how? One respondent commented:

When we realized that the World Wide Web was sprung upon everyone, and was where everything was happening, we did ask ourselves 'have we done our job? Do we need to be here anymore?' And the answer was 'yes—the people using us seem to think that we need to be here. We don't really know why they want us here, but they still seem to be using us heavily.'

The respondent added "We really don't know as much about our users as we would like to." The 1996 study by Patrick and Black (Patrick & Black, 1996c) of NCF users and their system usage patterns is a useful starting point, but I believe a great deal of future study could be done in this area.

9.1.3 Financial Costs.

There are significant financial costs involved in running a community network, and most respondents reported that user support alone was insufficient to cover those expenses. Government at all levels has not been forthcoming with continuing funding for community networks, and many organizations are finding that the initial flush of seed funding that they obtained in the early days is fading rapidly.

Many respondents reported that financial woes were one of their largest concerns in terms of their organization's future. Accordingly, community networks must work on developing sustainable funding models. Increased discussion among treasurers and fundraisers at community networks across the country may be an

important part of this work. Each community network has its own fundraising model, largely dependent upon local circumstances, but the sharing of strategies and plans will likely be a useful step.

Many in the movement have pinned a great deal of hope on obtaining some form of government support for community networks. Unfortunately, to date that support has been thin gruel indeed. Community nets have often been the beneficiaries of small seed grants, but it does not appear likely that any ongoing support is forthcoming. Nor, given the current political climate in Canada, does it appear likely that any government will invest anything in developing community networks.

Corporate support is also scarce. Community networks, unlike traditional charities, are not particularly 'feel-good.' Unlike organizations that aim to eliminate a disease or achieve some other goal of obvious benefit to society, community networks are still seen as a province of the geeks rather than a precursor to a communications system as important as the telephone is to us today. Contemporary high technology corporations, unlike traditional patriarchal companies, also appear to be uninterested in reaching out to the wider community. Some community networks have benefited from small in-kind donations from high-tech firms, but these contributions are usually modest.

Community networks must develop ways of being as self-sustaining as possible without relying so much on external agencies. One respondent described this process as a necessary transition within the movement. "I think in the future we're going to have to make that transition from being young enthusiastic organizations

to ones that have long-term sustainability. They have to be embraced by the public or else they're going to eventually die out." Another said that, "over the long haul the thing that will allow community networks to survive will be whether they've been able to convince enough people that they're necessary to equality in society—as public libraries are seen now."

9.1.4 Provision of Dialup.

Historically, community networks have placed a great deal of emphasis on the provision of dialup services so that all users, regardless of their income levels, can get online. Normally this has involved acquiring large banks of modems hooked up to dialup telephone lines.

Unfortunately, as noted earlier, telephone lines are extremely expensive. The pricing varies across the country, depending on the whims of the local telephone company, the local dialup price structure set by the CRTC and other circumstances, such as government subsidies. Nevertheless, phone line costs in Canada rarely fall below \$40 per month per line, and can reach as high as almost \$100 per month per line, including taxes. Given that a system requires a phone line for each user simultaneously online these costs add up extremely quickly.

This emphasis on access thus places an enormous financial burden on the organization. This is particularly the case since most users apparently do not feel compelled to contribute to the ongoing costs of the lines. One participant at the 1995 Telecommunities Canada conference in Victoria cynically commented that since

their dialup lines were servicing home users able to afford a home computer and telephone line of their own, their network infrastructure was not so much geared towards the 'have-nots' as the 'don't-wanna-pays.' In addition, the great popularity of the community nets invariably leads to constant busy signals, which users find frustrating, and which also cast the organization in a rather poor light.

The immediate financial stresses of access provision aside, there are also troubling longer-term implications of a focus on access. First, the monthly costs of commercial ISPs are becoming relatively affordable. In most urban centres it is now possible to obtain a monthly Internet account from \$15 to \$20 per month, sometimes for unlimited (or at least generous amounts of) access time. Commercial providers are able to undercut the ongoing costs of community networks considerably. Even though community nets have the advantage of volunteer labour and often manage to acquire low-cost or even free Internet network access, commercial ISPs can benefit from economies of scale and can also make deals with telephone companies (within CRTC regulations) and the long-haul network carriers.

Focusing on access is thus a dangerous strategy for community networks. Doing so may mean that they run the risk of being seen by users as little more than cheap access to the Net; to the pipe. From this point of view a user who can afford to pay \$20 a month for access through a commercial provider with no busy signals may feel that there is no reason to bother with the community service anymore. If this tendency becomes an exodus then the community network may soon find itself with a large pool of genuinely needy individuals who cannot afford commercial ISPs, but without the individuals with the means effectively to cross-subsidize other users.

There is also a technological danger in community networks building up large investments in telephone line equipment. If, as appears to be the case, ISDN or ADSL digital connection technology or cable modems that transmit data over normal cable television lines become popular, thanks to their ability to carry large amounts of information, (in technical terms both technologies offer much greater 'bandwidth' than modems and phone lines) then analogue phone line-based community nets may also find themselves in a technological backwater as the new technology does an end run around the old.

More important than these economic and technical issues is the concern that a focus on access provision could also lead to decreased energy spent on building up local information content. Distracted by the constant battles in providing access, community networks could be sowing the seeds of their own failure simply by failing to provide a discussion medium and content base that will ensure that longer-term relevancy to the community. One respondent said:

If you assume (community networks are) a service, and even more specifically, if you assume that that service is about providing access, I think you're missing the whole point.

Jay Weston (of Carleton University and the NCF) is the first person who stated it, and quite clearly . . . "The defence of electronic public space as a commons."

It's not that the community network provides a service to people. It's that the community network reflects, enhances the community as network and allows the community to connect itself in new and different ways. I don't define community networks in service provision terms at all.

9.1.5 Changing Technologies.

As creatures of technology, community networks must always adapt and change as the technologies upon which they are based change. Unfortunately for the limited budgets of community networks, CMC technology changes very rapidly.

Just a few years ago plain-text systems featuring 2400 bps modems were the norm. Now graphical user interfaces with 28.8 Kbps modems are the norm. There is a large technological jump from one to the other, and it is becoming increasingly difficult to make such transitions on a limited budget.

There is also the danger that community networks become too tied to a given technology. To apply broadly a metaphor from the realm of marketing, community networks should be careful to focus on the need they are addressing (community information, for example) rather than focusing on a specific product designed to meet that need (terminal dialup via modems, for example). The need should never change, though the technology will.

Several respondents expressed this theme of being caught by change quite strongly, using the unexpected success and popularity of the Web as an example. One commented:

My crystal ball isn't anywhere near as clear as it used to be. I really felt on top of things in '92 and '93. It was very clear to me what I was doing. Now I'm not so sure.

The rapid growth in popularity of Web – which went from being an academic curiosity in research labs to a fact of life advertised on billboards in about three years

– could likely not have been predicted. But a flexibility of outlook might have prepared community networks better for the transition. Another respondent said:

What's becoming really clear to me, watching this whole thing for the last three years, is I don't know how in the beginning we could have been so sure about what we were doing, given the changing technology . . . We got locked in to certain types of technology; we weren't flexible enough to anticipate changes.

Another specific area of great concern to community networks at the moment is provision of SLIP or PPP dialup access. Most community networks today support only character-based systems. In other words, users connect to text-only interfaces. No graphics are possible.

The process of logging in to most community nets is thus manual in nature, and users must read through screenfuls of introductory text (eg.: a system's "Message of the Day") while connecting. Community networks, which usually rely on optional user donations for their income and do not levy fixed usage charges, can use this fact to their advantage by including lengthy messages at startup exhorting users to donate generously. This introductory advertising can be quite elaborate. The National Capital Free-Net, for example, includes timers and other devices that pause the screen display during log-in, forcing users to read – or at least notice – these notices. Scripts can be tailored so that users who have donated are thanked on startup, but those who have not are encouraged to take out memberships and so on.

However, by configuring their terminal server hardware appropriately community networks can also, if they choose, support Internet networking protocols used for

dialup access—specifically the Serial Line Internet Protocol (SLIP) and the newer Point to Point Protocol (PPP). Either of these two protocols permits users to use sophisticated graphical browsers such as Netscape's popular Navigator product, or Mosaic, a similar Web browser developed by the US National Center for Super-computing Applications (NCSA). Compared with plain text-only interfaces the graphical user interfaces are very compelling, and generally much easier to use, as shown below.

```
the Vancouver CommunityNet (p1 of 3)

-----
Welcome to the Vancouver CommunityNet!
-----

The CommunityNet, supported by member and donor contributions, is a
community information system serving the Lower Mainland of British
Columbia, Canada.

Newsflash! We've won a legal victory concerning community network
charitable status. Find out more! And don't forget that we're not
the Vancouver Regional FreeNet anymore. Check out the reasons for
our recent name change!

-- press space for next page --
Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list
```

Figure X — Vancouver CommunityNet, viewed with a text-only browser.



Figure XI — Vancouver CommunityNet, viewed with a graphical browser.

However, in addition to requiring more network capacity resulting from the transmission of graphics, one hidden side-effect of implementing SLIP or PPP is the diminution of the community network's presence in the connection process. Unlike text-only character-based systems, SLIP/PPP connections are generally highly automated via the use of 'login scripts,' or automatic connection protocols. As a result there is no way for a community network to advertise itself during the connection process, reminding users of interesting announcements, the need to

donate or the ongoing existence of the organization itself. The community network thus becomes just another utterly transparent and irrelevant pipe to the network, no different from any commercial provider. Without the parade of login notices and banners the community network can disappear entirely from the user's consciousness during connection.

It is not immediately obvious how community networks can address this problem. As graphical user interfaces have now become the dominant user interface standard on personal computers, it is now increasingly imperative for community networks to support SLIP/PPP connections, but this problem of the absence of login notices remains. It is technically possible to work on some clumsy work-arounds. For example, extensive retrofitting of network connection hardware could be done so that the first page a user connects to is always the community network's home Web page, regardless of what page they actually specified. This is a technically complex idea, however, and implementing such a system would be well beyond the reach of most community network technical volunteers, even if the community network's terminal server hardware could be made to support it.

9.1.6 Local information content.

If access provision does not constitute the long-term future of community networks, then what does? The most common answer appears to lie in the provision of locally-relevant community information.

This can take on several forms. Perhaps the most basic involves encouraging

local non-profit community organizations, from seniors' centres to advocacy groups to educational societies, to host information areas on a system. Commonly referred to as IPs, or information providers, these groups are typically given free access to put up whatever material they deem relevant and important. IP material ranges from basic contact information about various groups, to full-fledged online publications.

Encouraging such IPs serves a number of useful purposes. First, it allows struggling non-profits to promote their organizations in ways which they normally might not be able to afford. The provision of such local content is unlikely to be profitable, and thus will probably remain a niche market – if that – in the commercial field. Second, a large base of IP information helps ensure that the community network becomes an information destination for the local community; a place where people know they can go for local material. A community net that establishes itself as the first place that people turn to for community information is far more likely to survive than one which is simply a low-cost or free network pipe. Third, an IP content base also means that a large number of local groups with the same basic goals – helping the local community – are united on one system. There is thus the hope that local discussions and connections can be made, with the community network as the medium. And fourth, the community network can benefit from the presence of high-profile and trusted IPs by name association. A community group which advertises its community network home page is also indirectly advertising and promoting the community network as well.

Another common form of generating community information involves encour-

aging users of the system to form special interest groups, or SIGs. SIGs are areas on the system dedicated to specific topics of interest to the group's volunteer organizers—from gardening to science fiction to automotive repair. Although SIG organizers may put together a small related information base, such as a regularly maintained Frequently Asked Questions (FAQ) list, most SIGs focus on promoting online discussions rather than simply building up a static information base.

SIGs are frequently formed around specific topics of interest that might be considered somewhat trivial to outsiders. But this can be seen as part of their strength – that they reflect personal interests. One respondent remarked that:

(users in SIGs may have no idea who other SIG members are, but) they are validating each other's interests. So, in terms of well-being as human beings, they are legitimizing each other's interests and concerns. I think that's very valuable, and not trivial at all.

Another area of growing interest is that of personal Web pages, which are becoming more common on many community networks; particularly those based around World Wide Web standards. These are areas on the system in which an individual user can put up a page containing anything of interest to him or her. Such pages usually reflect the user's own personal interests and hobbies, and often become very personal indeed, containing pictures of weddings or family or pets.

While it might be easy to dismiss personal Web pages as little more than a brief fad and a way for introverts to play as extroverts, it should be noted that these pages also represent unfiltered personal expression. It may be true that the vast majority of

personal Web pages can be seen as little more than pointless exercises in digital narcissism complete with photos of the family dog, but they are also an unprecedented opportunity for ordinary people to express themselves to a wide audience, without editors, filters or other hindrances. If the power of the press belongs to those that own them, then personal Web pages bring a little freedom of press to everyone by eliminating the normal layers of intermediation that are an integral aspect of most forms of information publishing.

Naturally, there are some dangers in this kind of informational freedom; many related to legal issues. To date Canadian law is a little unclear as to the responsibilities of a service provider in terms of monitoring systems for illegal system use. For instance, if a user were to post hate literature to a community network, who would be liable? And who would determine whether the material is constitutionally protected speech or actual hate? Similarly, sexually explicit material raises the issue of who should determine what can be published on a system and what cannot. Should children be permitted unrestricted access to the Internet via community networks? Or should file transfers be monitored to prevent the trafficking of pirated (illegally copied) software?

Nevertheless, many of these questions are likely to come about regardless of whether personal Web pages are permitted on community networks. Already Usenet news postings raise thorny legal, moral and ethical questions that are still largely unresolved.

For example, a subject of some concern at the 1995 Telecommunities Canada

conference in Victoria was the fact that Canadian libel law holds a person who repeats a libelous statement as accountable as the person who made the original remark. This is a problem in the field of Usenet posts, because it is traditional for a person posting a follow-up post to quote a portion of the previous message in order to establish context. Would this mean that a follow-up post could be held as libel under Canadian law? And to what extent are community networks and their boards liable themselves for public statements published electronically by their users? The courts have yet to answer these questions, but they pose great concerns for small non-profit community networks, which could be economically destroyed by the costs of even a frivolous legal action.

9.1.7 Defining attainable goals.

The early 1990s were an exciting time for community networks. There was a tremendous deal of optimism and energy focused on the fledgling systems, and a great deal of hope expressed that they would be able to serve whole communities as central information bases. The early successes of organizations such as the NCF in Ottawa likely helped reinforce these views.

Unfortunately, as time has progressed there has also been increasingly the realization that community networks cannot hope to be all things to all people. The economic and technical challenges involved in building a networking infrastructure to serve every resident of anything other than a small community are massive. And community networks, despite their volunteer-driven enthusiasm, cannot hope to

match the large budgets and driven organizational structures of large companies in terms of providing such an infrastructure. It has become increasingly clear that community nets must focus on a fairly manageable set of key attainable goals.

Andrew Patrick, of Ottawa's NCF, has spoken extensively of what he calls the 'soup kitchen' model for community networks. While unglamorous in nature, this model emphasizes that the access provision components of community networks should ideally be there to serve those without any other form of access. Community networks, in their present form at least, cannot hope to maintain the vast and growing communications infrastructures needed to serve all aspects of a population equally. The soup kitchen concept, by focusing on the basic needs of the information disenfranchised, deals with this problem by targeting a manageable number of individuals. In an online note he comments:

What I am suggesting, then, is that the NCF adopt a limited mandate. Our role should be to provide services to members of the community who cannot get online in other ways. We should provide the training, equipment, and connections that people cannot get somewhere else. Once people have the skills, equipment, or funds to get connected in other ways, then our role should stop. People should graduate from the FreeNet and move on, if they are able, to other more advanced services, just as people who no longer have the need stop eating their meals at the soup kitchen. (Patrick, 1995)

The question remains as to the kind of funding that might be available to support such systems. The model assumes a certain charity-oriented approach, which is problematic because Revenue Canada has systematically denied charitable tax

status to community networks, as noted in the history of the Vancouver CommunityNet. Whether this situation will change, and if so to what extent, with the Vancouver court victory is unknown.

However a cynic might also note the way in which soup kitchens, originally viewed as temporary and interim measures, have become institutionalized in our society. And they have become institutionalized in a fashion that can be marginalizing. There is thus the concern that electronic soup kitchens, like their physical counterparts today, might end up forcing the underprivileged into a kind of electronic backwater. Organizers with the Blacksburg Electronic Village (BEV) in Virginia, are quoted in one study as arguing that "If only underserved groups are targeted, they will not have the richer network access they would if they were involved in a broader-based community initiative. Targeting just underserved groups may not lead to the critical mass necessary to get the network operating."

(Anderson, *et al.*, 1995, appendix B.)

Additionally, there is the danger that community networks will lose whatever heterogeneous qualities they may now possess. Recasting community networks as services for the economically disadvantaged may achieve some goals, but reduce the likelihood of them becoming vibrant, pluralistic systems.

Even if community networks do not take the soup kitchen approach, it seems likely that as time passes there will be a certain refocusing of the scope of community nets' undertakings. The simple fact that significant ongoing funding, whether government or corporate or user-based, does not appear to be forthcoming seems

likely to dictate that this will be the case.

One possible way of addressing this issue of limited resources might be viewing the community networks as a common meeting ground or starting point rather than as a destination. The early Cleveland Free-Net model emphasizes what is essentially a local bulletin-board system. Following this model, users dial in, enter through the front door and remain within the all-encompassing system for the duration of their session. In a real sense this is a centralized and hierarchical model.

By contrast, adoption of Web standards leads to a much more fluid and decentralized conception of information. Content can reside anywhere—and instead the pointers to that information, or the connections between nodes, become critical. This model is inherently less controllable and centralized. In a way, users no longer enter through the front door and proceed through the lobby—they could come in through the bathroom window or crawl in from the basement. In this context, community networks can serve as central index points for finding community information and local discussions. They thus move away from being the centralized controllers of information. The Vancouver CommunityNet, in part owing to its fairly limited local content base, has moved in this direction by providing a central CommunityPages Web index that lists pointers to other community sites.

It should be noted that while this model has the strength of distributing the load across a wide variety of systems and thus reducing the strain in individual community networks, it also means that community networks would have to work much harder to present a unified and well-defined role. It might be more difficult to

maintain relevance in such a situation. One respondent remarked on this tension between the older bulletin-board style community network and Web-based systems by noting that:

Moving through that milieu (the Web) it's a "you as an individual" web of conceptualization. It's an individual basis rather than you collectively coming together in some sort of mental space.

9.1.8 Training.

One area that would seem to be ideally suited to the nature of community networks is that of user training. Personal computers, despite their status as consumer commodities, are still complex and difficult devices for most people to use. Despite a certain degree of effort on the part of computer manufacturers to address ease of use, computers are still nowhere near as simple to use as other consumer hardware, such as stereos, telephones and VCRs.

This is particularly problematic for older generations of Canadians, who will not have had early exposure to computers as children. Additionally the entrenchment of personal computers in middle class families also implies that the economically disadvantaged may also find themselves at a loss in terms of participating in a computer-oriented society.

Community nets, as volunteer-driven and not profit-oriented enterprises, hold a great deal of promise in this area. This they do by helping in a modest way to redress some of these imbalances in computer literacy. Many community networks hold

introductory training sessions and courses to help familiarize new users with some of the arcane complexities of online communications. In addition to semi-formal training, community networks also serve as more general training grounds by encouraging users to help one another in getting used to the online way of doing things. This kind of social networking and peer training was cited by many respondents as being of great importance to their users.

9.1.9 An examination of the technical capacities and limitations of CMC in general.

Finally, I believe that further research into the sociological and community impacts of CMC technology is an important area that deserves further attention. Computer networking is being implemented extremely rapidly on a wide scale. Massive corporate interests, convinced that CMC will enable them to reap large profits, are investing billions in developing a sophisticated network infrastructure. But how will this new technology affect society?

As noted in the literature review, much of the research work in this area has focused largely on psychological responses of people to technology, rather than more sociological examinations. If we as a society are going to embrace this technology, as seems likely, a more detailed examination of some of the possibilities seems wise.

Sometimes wholesale adoption of a new technology has consequences unimaginable by its inventors. Alexander Graham Bell probably never realized the

impact that the telephone would have on the design of Canadian cities or changes in the power structures of companies. Henry Ford probably never imagined how the automobile would result in a complete reshaping of urban and suburban development. Similarly, broadcast television is used primarily for highly commercialized and homogenized entertainment, and not for the educational and cultural goals that early writers anticipated. Community cable television in most areas is represented by little more than a token unwatched station that cable television stations reluctantly provide in order to meet regulatory requirements.

But I believe our future can be directed; it is not inevitable. If we take the time to look ahead before plunging blindly on we may be able to mitigate some of the possible drawbacks of computer-mediated communications.

9.2 The Niche of Community Networks.

There is the hope by some in the community networking movement that the networks can serve as a sort of technical fix to many of our society's problems; that the installation of computer-mediated discussion systems is somehow going to enhance the vibrancy of community life and solve deeply-rooted social problems. This belief is looking increasingly naïve.

In fact, this faith in community networks might be seen as just the latest example of a kind of blind techno-optimism that has been fairly common in North America this century. Many new technological developments, from the telegraph to telephones to electricity to the automobile to broadcast television to community

cable television to personal computers, have been hailed as marvellous saviours of society. For example, Winner quotes a 1924 writer as saying that "Electricity is a decentralizing form of power: it runs out over distributing lines and subdivides to all the minutiae of life and need. Working with it, men may feel the thrill of control and freedom once again." (Winner, 1986. p. 95.) Replace 'electricity' with 'cable television' or 'CMC' and one might have a more contemporary form of the same argument.

While community networks as a form of CMC may indeed provide the opportunity for increased social discussion, they should not be seen as a social panacea. Doing so tends to obscure the specific ways in which they may be positive contributions to local community. In addition, pinning such enormous false hopes on community networks tends to diminish the value of their genuine successes in providing public fora for community participation.

The Internet and other types of CMC systems are currently enjoying massive attention from the public, government, corporations. Billions of dollars are being invested in the development of large-scale network infrastructures. Yet these systems are being built largely with private interests in mind, and the public interest appears largely to have been ignored in the stampede. As one respondent phrased this issue,

There are a lot of people that see a lot of chances to make a lot of money providing access and content, and I'm hoping that that doesn't overshadow the possibilities that exist for bringing people together . . . actually regenerating some notion of a commons where people can go and meet and interact with peers and exchange ideas and transact personal business on a human level.

Community networks, however, offer the promise of maintaining a small and modest, but nonetheless real, public presence on the nets. If, as seems likely, widescale deployment of CMC technology occurs and CMC becomes as integral a part of most peoples' lives as the telephone is today, then the maintenance of such a public voice becomes all the more crucial. Community networks, given resource limitations and funding constraints, cannot hope to be the universal providers of access and information for Canadian society that was sometimes hoped for in the early days. However, like co-op radio stations, community newsletters and community access television, community nets still play an essential role in maintaining a small public voice in the contemporary world of commodified information. One respondent eloquently commented:

Personally my sense is that community networks are just part of a diffusion of innovation; a way for a little bit of perturbation to occur. Sort of a point of unintended consequence that at some point might change the way the system actually develops. And that's what's happened time and again with the development of independent telephone companies and the extension of telegraph across BC and so on. That's what (these services in) rural communities did—they provided unintended ways for people to do things. But in the end the protocol became standardized enough that those bumps in the road got flattened out pretty much, and all we were left with was a notion of fairness and access and affordability at a regulatory level.

This is, as the respondent himself noted, a rather "grim view." But it does reflect the fact that in many ways community networks are small and picaresque operations compared to the massive telecommunications juggernauts now defining

the future of electronic communications. One interview subject described this by saying that community networks “can’t create radical change at the macro level but I think they can create some changes at the micro level that will impact the macro level.” It has become apparent that community networks cannot realistically become the large-scale providers of universal access that some hoped that they would become. Nor do they, as argued in this thesis, have much impact on local community.

Instead, like local newspapers or cooperative radio efforts, community networks can at least hope to be small outposts of community-owned and controlled information. This is a considerably less grand vision than the ones touted in the early, heady, days of community networks, but perhaps more realistic. Visions of universality have largely been usurped by the glamorous promises of the giant networking corporations. But they will have much greater difficulty in buying into the arena of public expression, and that is perhaps where community networks must lay their greatest hopes for survival and growth.

9.3 Summary.

In conclusion, my findings suggest that there is something of a gap between the community-building rhetoric of many supporters of community networks and the actual work being undertaken by volunteers with community networking organizations.

The central question of this thesis was “in what ways and to what extent have

community networks contributed to the goal of building community?” Although the mission statements and goals of most of the community networks studied did make some mention of local community, the promotion of local community was not held to be a major objective by my respondents. Neither did the respondents believe it was a primary objective of their organizations, although they did recognize it as being a general, though not first-tier, objective of the movement as a whole. This is in contrast to the views of many theorists of community networking, who frequently maintain that the promotion of local community is of key importance to the entire concept of community networks. Accordingly, my respondents reported that community networks have not been successful in building local community.

Instead, the major theme emphasized by most of my respondents was that community networks hold an important potential to construct and maintain a publicly-owned and controlled space on increasingly private and commercial computer-based communications networks. Community nets may not, therefore, be a major player in the online world of tomorrow, but if they continue to thrive and flourish may help contribute to a more balanced and egalitarian vision of a wired future than that offered by purely commercial enterprises.

Appendix A — Questions asked of each respondent.

Personal Background:

What is your current line of work? In what general field? (eg.: university, library, non-profit sector, private business, etc.)

How did you first hear about the community networking movement?

How did you become involved? What interested you and what motivated you to become involved?

Views of own community network:

What are the main goals and purposes of your community network?

Do you consider these goals and purposes to be typical and representative of the movement as a whole?

Do you consider these goals and purposes to be similar to or different from other community networks in Canada?

[If building local community is among these goals and purposes] What priority would you say it is assigned within the organization?

[If building local community is not among these goals and purposes] Would you consider building local community to be one of your implicit goals?

Community building:

How do you consider the term 'community' to be defined in the context of 'community' networks?

What specific initiatives does your community network undertake to promote community building? (ie.: promoting or creating a sense of local community)

What case studies can you give as examples?

Do you think the community-building efforts are successful?

If so, in what respects do you consider them to be successful?

If not, in what respects do you consider them to be unsuccessful?

What do you consider to be the main barriers that impede community networks from helping to build local community?

Conclusion:

What do you see as being, in general terms, the future directions of community networks in Canada?

Where do you see your organization being in a few years' time?

Appendix B — List of community networks and organizing committees in British Columbia.

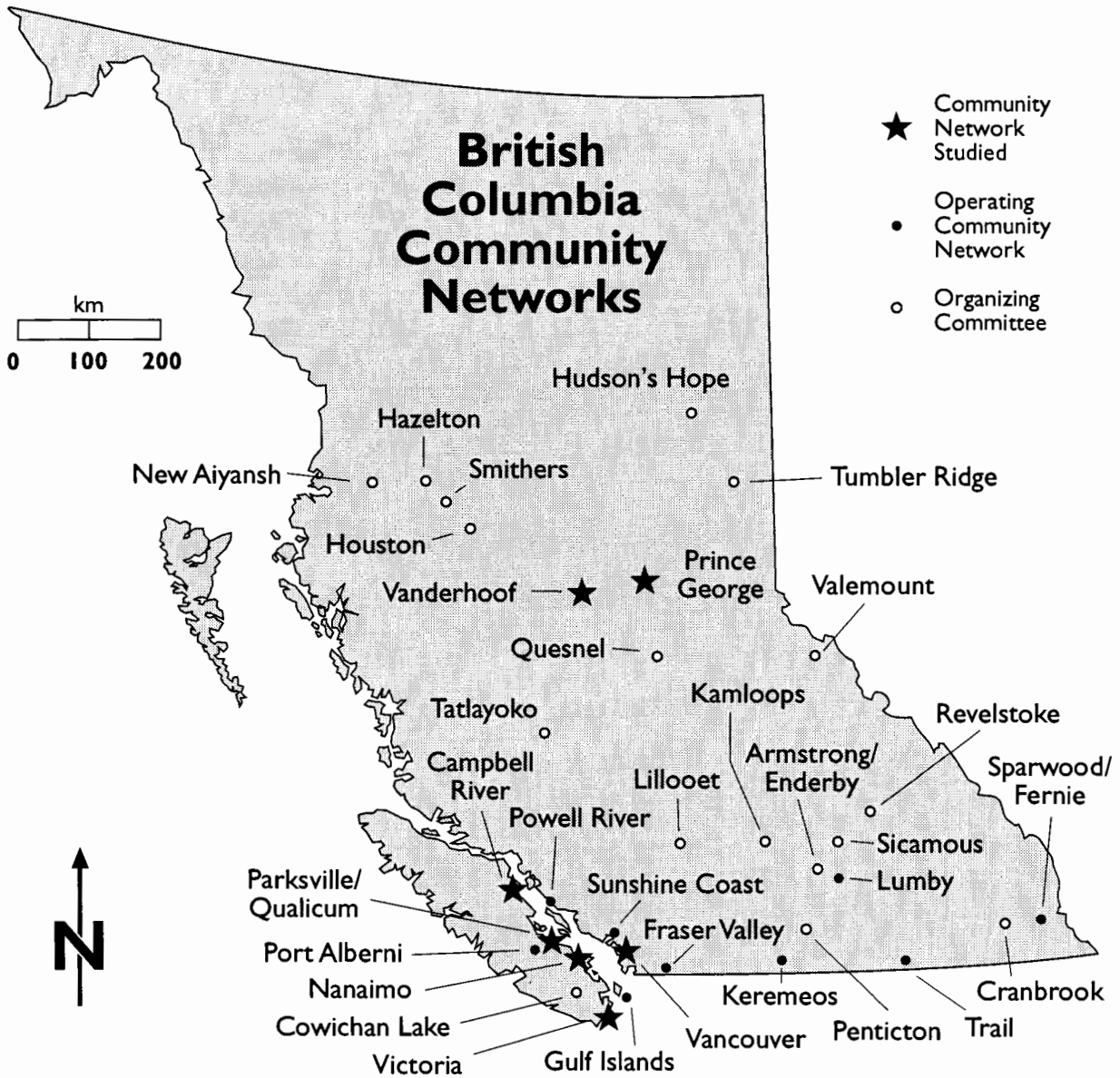


Figure XII — Community Networks in British Columbia.

I. Operational Community Networks:

Please note that British Columbia's area code will be changing on October 19, 1996. At present all BC telephone numbers are in the 604 area code. After October 19 all telephone numbers outside southwestern BC (including Vancouver Island) will move to the 250 area code. Many of the phone numbers below will thus be changing accordingly.

Campbell River Free-Net — Campbell River

<URL:http://www.cn.camriv.bc.ca/>
<URL:telnet://cn.camriv.bc.ca/>
<URL:telnet://access.cn.camriv.bc.ca/>
Contact Name: Pat Presidente.
Phone: (604) 287-9030
Email: Pat_Presidente@sd72.bc.ca

CIAO! (Community Information Access Organization) — Trail

<URL:http://ciao.trail.bc.ca/>
<URL:telnet://ciao.trail.bc.ca/>
Contact Name: Ken McClean.
Phone: (604) 368-6434
Email: kmcclean@ciao.trail.bc.ca

Gulf Net (Galiano, Mayne, Saturna & Pender Islands)

Contact Name: Dale Lyon.
Phone: (604) 539-2261
Email: Dale_Lyon@gulfnet.pinc.com

Keremeos STARS Internet — Keremeos

<URL:http://keremeos.com/>
Contact Name: J. C. Stranart.
Phone: (604) 499-2920
Email: kermit@keremeos.com

Lumby: The Virtual Village — Lumby

<URL:http://www.monashee.com/>
Contact Name: Harry Adam.
Phone: (604) 547-9231
Email: haadam@sd22.bc.ca

Mount Arrowsmith Community Network — Parksville, Qualicum

<URL:http://macn.bc.ca/>
Contact Name: Jim Swanson.
Phone: (604) 752-5643
Email: jims@macn.bc.ca

NANO (Nechako Access Network Organization) — Vanderhoof

<URL:http://www.nano.bc.ca/>
Contact Name: John Rowlandson.
Phone: (604) 567-5545
Email: jrowland@vhf.nano.bc.ca

Port Alberni Community Network — Port Alberni

<URL:telnet://freenet.alberni.net/>
<URL:http://freenet.alberni.net/>
Contact Name: Robb Thomas.
Phone: (604) 977-9214 (pager)
Email: rthomas@cedar.alberni.net

Powell River Community Network — Powell River

<URL:http://www.prcn.org/>
Contact Name: Bev Collins.
Phone: (604) 485-4051
Email: bev@prcn.org

Prince George Free-Net — Prince George

<URL:telnet://freenet.unbc.edu/>
Contact Name: Lynda Williams.
Phone: (604) 562-9281
Email: lynda@freenet.unbc.edu

Rocky Mountain Info Net — Sparwood, Fernie

Contact Name: Brian Grainger.
Phone: (604) 425-2605
Email: brian.grainger@rmin.net

Sea to Sky Free-Net — Squamish, Whistler, Pemberton

<URL:http://www.mountain-inter.net/~freenet/>
<URL:telnet://alpha.sea-to-sky-freenet.bc.ca/>
Contact Name: Detlef Rudolph.
Phone: (604) 892-5531
Email: drudolph@sea-to-sky.net

Sicamous

<URL:http://netshop.net/sicamous/>
Contact Name: Buryl Leighland.
Phone: (604) 836-3144
Email: sicoutin@netshop.net

Tumbler Ridge

<URL:http://www.pris.bc.ca/tr-library/access.html>

Contact Name: Marcella Bakota.

Phone: (604) 242-4246

Email: tr-lib@pris.bc.ca

ValleyNet — Abbotsford, Mission, Chilliwack

<URL:http://mindlink.net/paul_kurucz/vnet.htm>

Contact Name: Mathew R. Brown.

Phone: (604) 792-9970

Email: m_brown@uniserve.com

ValleyNet info line: (604) 858-9457

Vancouver CommunityNet

<URL:http://www.vcn.bc.ca/>

<URL:telnet://vcn.bc.ca/>

Contact Name: Margaret Coates.

Phone: (604) 257-3811

Email: mcoates@vcn.bc.ca

Victoria Telecommunity Network

<URL:http://www.freenet.victoria.bc.ca/>

<URL:telnet://freenet.victoria.bc.ca/>

Contact Name: Gareth Shearman.

Phone: (604) 727-7057

Email: shearman@freenet.victoria.bc.ca

II. Organizing Committees:**Armstrong, Enderby, Cherryville**

Contact Name: Jane Lister.

Phone: (604) 545-2215

Email: jlister@nocdc.bc.ca

Cowichan Lake Community Network — Lake Cowichan

Contact Name Christina Martens.

Phone: (604) 749-6593

Email: chmarten@cln.etc.bc.ca

Cranbrook Free-Net

Contact Name: David Humphrey.

Phone: (604) 426-7258

Email: dahumphr@cln.etc.bc.ca

Hazelton

Contact Name: Ruth Cooper.

Phone: (604) 842-5961

Houston

Contact Name: Brenda Allen.

Phone: (604) 845-7266

Email: ballen@noradm.nwcc.bc.ca

Hudson's Hope

Contact Name: Janice Osinchuck.

Phone: (604) 783-9994

Email: josinchu@cln.etc.bc.ca

Kamloops Free-Net

Contact Name: Alexander Macdonald.

Phone: (604) 372-5145

Email: knightingale@cariboo.bc.ca

Lillooet

Contact Name: Carl Chaplin.

Phone: (604) 256-4514

Email: bgoldber@cln.etc.bc.ca

New Aiyansh

Contact Name: Tom Ueda.

Phone: (604) 633-2228

Email: tueda@cln.etc.bc.ca

Quesnel Free-Net — Quesnel

Contact Name: Mark Ekelund.

Phone: (604) 992-8802

Email: mekelund@cln.etc.bc.ca

Revelstoke

Contact Name: Adelheid Bender.

Phone: (604) 837-5345

Email: cocrev@mindlink.bc.ca

Smithers Free-Net — Smithers

Contact Name: Dave Stevens.

Phone: (604) 847-8888

Email: ad281@freenet.unbc.edu

Tatlayoko Think Tank
Contact Name: John Kerr.
Phone: (604) 476-1187

Valemount Internet Society — Valemount
<URL:<http://netbistro.com/~jgrogan/>>
Contact Name: John Grogan.
Phone: (604) 566-8288
Email: jgrogan@netbistro.com

Virtual Valley — Penticton
Contact Name: Donna Benson.
Phone: (604) 496-5984
Email: dbenson@awinc.com

Source: BC Community Networks, 1996.

Appendix C — Selected Online Resources.

Comm-Nets SIG:

During the course of researching this thesis I assembled several dozen useful community network-related references and informational documents. These I have put online in the form of a SIG (special interest group) on the Vancouver CommunityNet. The URL for the Comm-Nets SIG is:

<URL:<http://www.vcn.bc.ca/sig/comm-nets/>>

BC Community Networks:

<URL:<http://www.freenet.victoria.bc.ca/bccna/bccom.html>>

Telecommunities Canada:

<URL:<http://www.freenet.mb.ca/tc/>>

Peter Scott's Free-Nets and Community Networks Page:

<URL:<http://duke.usask.ca/~scottp/free.html>>

The US National Public Telecomputing Network (NTPN):

<URL:<http://www.nptn.org/>>

Glossary of Computing Terms relevant to Community Networks.

Computer-mediated communications, being a field based on modern computer technology, is one laden with obscure technical terms and arcane jargon. This glossary is provided in an attempt to define some of the more commonly used terms and concepts. Please note that most words are described in very general terms for brevity, and special cases and exceptions are largely omitted. Acronyms are pronounced as individual letters unless otherwise indicated. Some of these terms are also trademarks (proprietary intellectual property) of large US computer firms, though the words may be in common usage.

For much more complete, and thus much more precise, definitions of these and other computer-related concepts I refer you to *The Jargon File*. (Raymond, 1996.) In addition to technical accuracy this comprehensive dictionary of computer-related slang also provides a wealth of entertaining historical background to – and fascinating insight into – the mysterious world of computer nerd culture.

Account — Storage space on a *multi-user computer* system to which a *user* has access. This space is associated with a given *user ID*, and is generally protected by a password to prevent other people from reading or changing its contents. Accounts do not necessarily involve the transfer of funds. Commercial systems charge users for their computer accounts, but many *community networks* do not.

ADSL — Acronym for ‘asymmetric digital subscriber line.’ A fairly new technology that permits rapid transfer of information over regular telephone lines; far more information than permitted by an *ISDN* connection or a regular *modem*.

It is called 'assymmetric' because the technology allows the user to receive information at a considerably higher rate than he or she can send back out. (6 *Mbps* to the user and 640 *Kbps* from the user.)

Analogue — Information in a continuously variable form. A useful illustration is to think of analogue information as being represented by an infinite number of shades of grey, rather than being represented by just pure black or pure white. Sound recorded on a vinyl record, for example, is analogue in nature. Traditional telephone and television technology is also analogue technology. However both telephony and television are increasingly becoming implemented in a *digital* form which emulates analogue standards in order to maintain compatibility with existing analogue equipment. Generally written 'analog' in the US. See also *convergence*. cf. digital.

Anonymous FTP — People around the world maintain free *archives* of *software* and other information as a public service. These archives frequently use anonymous *FTP* for file transfer. That is, the user uses *FTP* (the file transfer protocol) to transfer the files, but does not need an *account* on the archive's *host* system in order to *log in*. The user logs in anonymously. However tradition dictates that the user leave his or her *email* address by way of courtesy.

Anonymous remailer — In real life it is quite easy to send someone a letter anonymously. However, on the *Internet*, *email* is normally associated with a *user account* on a given *host computer*. An anonymous remailer is a service that forwards a message on to its recipient after stripping off any possible identifying headers. The recipient has no way, therefore, of knowing who sent the message. Anonymous remailers are controversial because of the potential for abuse.

Applet — A small *application*. *Java programs* used by *Web browsers* and *NCs* are typically described as being 'applets.'

Apple macOS — A *GUI operating system* produced by US-based Apple Computer, Inc.; an early pioneer in mass-market GUIs. Macintosh personal computers are based on the macOS.

Application — In most contexts generally synonymous with '*computer program*.' An application is usually directly operated by the *user*, and relies upon the computer's *operating system* to function. cf. operating system.

Archive — In variable senses, as noun and verb. Frequently a library of *software* or other *digital* information. See also *anonymous FTP*.

ASCII — Acronym for ‘American Standard Code for Information Interchange.’ A code for representing commonly used symbols – letters, numerals, common punctuation – in a *digital* form. ASCII is the lowest common denominator on the *Internet*, its lingua franca, and is supported by nearly all modern *computers*. Plain ASCII is represented by 7 *bits* of data, and cannot normally be used to encode many non-English accented characters because it is limited to 127 (2 to the power of 7) different values. Pronounced ‘*ass-key*.’

Asynchronous communications — Forms of communication that do not require both parties to be available simultaneously. Online examples of asynchronous communications include *email* and *Usenet news*. Regular mail (eg.: *snail mail* via Canada Post) is also asynchronous in nature. cf. *synchronous*.

Backup — As a verb the act of creating and storing a duplicate copy of important information. This duplicate is archived so that it can be restored in the event of calamitous loss of the original data. As a noun a backup is the duplicate copy thus made. Numerous backups of this thesis were hastily made following a fire in the author’s apartment building.

Bandwidth — The carrying capacity of a given information transmission system or *network*. A network capable of carrying large amounts of information is said to have ‘high bandwidth’ whereas a network capable of carrying only a small amount of information is said to have ‘low bandwidth.’ Sometimes used by extension to refer to information content itself. (eg.: ‘this is a very low-bandwidth conversation we’re having here.’)

Baud rate — An older measure of the speed at which data is sent over a *modem* connection, amongst other things. Frequently used interchangeably, though erroneously, with *bits per second*. (there are highly obscure technical differences in meaning between the two terms: baud rate refers to state changes, not absolute data throughput.)

BBS – Acronym for ‘bulletin-board system.’ Usually a publicly-available computer information system run by someone as a hobby. Occasionally a small business operation. A BBS is typically accessible only by *dialup lines* and not by the *Internet*.

Binary — Base one information with each datum, a *bit*, having either one of two values — one or zero. Modern *computers* are *digital* and represent all information internally in a binary format. There is absolutely no ambiguity in a binary representation of information — either the bit is true or it is false.

Bit — Contraction of ‘binary digit.’ A single piece of *binary* information — a one or a zero, true or false.

Bits per second — See *bps*.

Bounce — *Email* that does not reach its destination — whether because of a transient *network* problem, because the recipient’s account or *computer* system no longer exists or because of a badly formed email address — is said to have bounced.

bps — *Bits per second*. The speed at which data is sent over a *modem* connection, amongst other things. Common modern modem speeds are 14.4 *Kbps* (kilobits per second) and 28.8 *Kbps*. Speeds common on older modems include 300 bps, 1200 bps, 2400 bps and 9600 bps. See also *baud rate*.

Browser — See *Web browser*.

Bulletin-board system — See *BBS*.

Byte — Eight *bits*. See also *kilobyte*.

Cable modem — A device that permits ordinary household cable intended for transmitting television information to carry *digital* information used by *computers*. *Cable modems* have a very high theoretical *bandwidth*, much higher than that of ordinary telephone modems. At present they are not widely deployed.

Cancel — In *Usenet* parlance, to mark a given *posting* for deletion. Normally only the author of a post can cancel it. However, ingenious *hackers* have found ways to subvert the cancel mechanism and use it, for instance, to try to stem the flood of *spam* by sending forged cancel messages. Such vigilante cancelling is very controversial.

CD-ROM — Acronym for ‘compact disc, read-only memory.’ The use of compact disc (CD) technology, originally designed for storing digitally recorded audio, as a *mass storage* medium for *computer* data. Pronounced ‘see-dee *romm*.’

Character — Any textual symbol available on a *computer*, such as a number, a letter or punctuation. On a *MU**, a character is a fictional being or virtual puppet, created and controlled by the *player*.

Character-based — A *computer* information display system based entirely on text-only information, usually in an *ASCII* format. Character-based displays cannot be used to display pictures, or ‘graphical’ information.

Chat system — In a general sense, any *CMC* technology that permits people to exchange textual information in real time. (ie.: *synchronously*) *IRC* is a prime example of a chat system.

Chip — A tiny chip of plastic-encased silicon upon which *digital* circuitry is built. Also ‘microchip.’

Client — A *computer* on a *network* used to access information on a *server*. Can also refer to the *software application* used in the process. (eg.: a *Web browser* is a client.) cf. server.

Client-Server — A paradigm used in computing architecture, based on the idea that a *client* computer is used to access information stored on a *server*. The World Wide Web is based around this type of client-server architecture. The opposite is peer-to-peer networking.

CMC — Acronym for ‘*computer-mediated communications*.’ Any human communications in which *digital hardware* is used as a medium. *Email*, *Usenet newsgroups* and *Web pages* are all forms of CMC. cf. *F2F*.

Community Network — A locally-oriented *CMC system*, frequently run by volunteer non-profit groups. Generally community networks are intended to encourage local discussions and the promotion of local information content as well as providing a point of access for those who might not otherwise be able to afford it. See also *FreeNet*.

Compiled Language — A *computer* language turned by a *computer* into *binary* form usable by a *computer* from its original *source code* only once, and then run in *binary* format thereafter. Usually somewhat more difficult to work with than an *interpreted language*, but generally much faster.

Computer — In general, a device that uses *digital* technology to process and manipulate information. Analogue computers do exist, but are so obscure as to be occult.

Conferencing system — An *asynchronous* text-based *online* discussion system that permits *users* to exchange public messages. Frequently implies, but does not always mean, a semi-private or restricted-access system of some type.

Content — Information of interest to a human being — sound, text, pictures, video, etc. As opposed to *computer software*, which can be run on computers by people, but which is not useful and interesting information in and of itself.

Convergence — Also known as *digital convergence*. The concept that all modern information technologies, currently based on very disparate technological paradigms and systems, are becoming digital in nature. At present a person might receive information by telephone, television, radio, newspaper and print. In the future these different information delivery systems may be replaced by a unified system based wholly on digital technology with all the advantages (eg.: ease of access, flexibility) and disadvantages (eg.: increased centralization, homogeneity and control) that this model confers.

Cross-post — To *post* a single message to multiple fora, particularly multiple *Usenet* groups, simultaneously. Although cross-posting is a useful feature that can be used to disseminate information to many pertinent fora at the same time, it is also a mechanism widely abused for the purposes of *propagating spam*.

CPU — Acronym for 'central processing unit.' The main component of a *computer* that processes information. Also, by extension, the cabinet that houses this main computer. (as opposed to video monitors, keyboards, mice, printers, etc., which are considered peripheral devices.)

CRTC — Canadian Radio-television and Telecommunications Commission. The Canadian federal agency responsible for regulating broadcast and telephone communications. The American analogue is the FCC, the Federal Communications Commission.

Cyberpunk — A literary movement that swept the world of science fiction in the mid to late 1980s. The famous *Sprawl* trilogy by Vancouver author William Gibson (*Neuromancer*, *Count Zero* and *Mona Lisa Overdrive*) is the canonical example of the genre, which emphasizes a gritty, streetwise view of technology, set in a near-future dystopia. Gibson's notions of a ubiquitous global *network* based on *virtual reality* interfaces, which he named *cyberspace*, were an integral part of his books, and his ideas have proved very influential with designers of *CMC* systems.

Cyberspace — An artificial, virtual, constructed mental environment or notional space developed using *computers*. The term is drawn from the nomenclature of William Gibson's speculative fiction novels. See also *information highway*, the

Net, the Matrix.

Data dialup — The use of ordinary voice telephone lines to connect two *computers* together via *modems*.

Database — A highly structured set of data that is indexed and searchable.

Dialup — Also known as data dialup. The technology that permits a *user* to connect his or her *terminal* or *personal computer* to an *online host* by means of *modems* and ordinary voice telephone lines. (aka POTS.)

Dialup pool — A collection of *modems* accessible via a single telephone number. *Users* can dial this single number and connect to one of the modems.

Digital — Information divided into discrete pieces of information and not in a continuous form. Modern digital *computers* rely on a *binary* representation of data. Digital technology can be used to simulate *analogue* technology if there are sufficient discrete subdivisions that a human cannot distinguish the transitions. A compact disc used to store recorded music, for example, uses very high-resolution recording of digital information and thus cannot be distinguished from an analogue recording by the human ear. But although a CD may sound analogue to the listener, its information is nevertheless represented internally in a digital format. cf. analogue.

Display — As a noun, a video monitor or some other visual device used to show *computer* information in a visual form. As a verb, presenting computer information visually for the *user's* benefit.

Distributed — A *digital* information system dispersed over multiple *computers* and not centralized at a single location. The *World Wide Web* is a typical example of a distributed system. Individual *Web pages* themselves are centrally located on *servers*, but those servers are dispersed widely across the *Internet*. A distributed system is less susceptible to cataclysmic failure than a centralized one because it has fewer *single points of failure*, but is also harder to control. Whether this is desirable or undesirable depends largely upon one's political point of view.

Download — In the context of most *community networks*, the act of transferring a *file* from the community network's host *computer* to the *user's personal computer*. cf. *upload*.

Dumb — A device that does not have a *CPU* and thus cannot process information. A

dumb *terminal*, for example, can only be used in conjunction with a *computer*, because it is useless alone. cf *smart*.

Email — Short for 'electronic mail.' Text-oriented *asynchronous digital* communications.

Emoticon — Portmanteau of 'emotion(al) icon.' Jocular name for the small text-based symbols, such as the familiar *smiley*: :) used in CMC to represent emotions. Interestingly, Aoki notes that smileys used in Japan are read horizontally, unlike those used elsewhere which are traditionally read sideways. (Aoki, 1994.)

Encryption — The process of passing *digital* information through complex mathematical formulæ in order to produce protected, encrypted data. This information can only be read again if it has been decrypted first; it appears as random digital garbage otherwise. Decryption requires both appropriate decrypting *software* and the original password used to encrypt the data.

Environment — The operating environment defined by an *operating system*.

Ethernet — A medium-speed networking system frequently used as office *LAN*. Ethernet transmits information at a theoretical speed of 10 Mbps (megabits per second), although it never reaches that theoretical limit for technical reasons.

Fidonet — A large, anarchic *distributed network* of hobbyist-run *BBSs*.

File — A discrete collection of *computer* data. A computer document.

Flame — As a noun, an intentionally inflammatory message. As a verb, the act of sending such a message to a person or a group.

Flamebait — A message deliberately crafted in order to provoke an angry flame as a response. See *troll*.

Flame war — A heated, angry exchange of messages, usually in a public forum. Implies the complete absence of thoughtful, respectful discourse.

FreeNet — (or Free-Net) In general terms, a *community network*. More specifically, frequently a *community network* affiliated (or once affiliated) with the US-based *NPTN*. (National Public Telecomputing Network.)

FreePort — A very simple text-only *menu* system developed by Case Western Reserve University (CWRU) in the US for use with the Cleveland *Free-Net*. Runs

on the *UNIX operating system*. Still used by many Canadian *community networks*, but rapidly being phased out just about everywhere in favour of *Lynx* and other *Web*-based solutions.

F2F — From ‘face to face.’ Originally used in a jocular fashion; indicates ordinary human communications in person – whether verbal or non-verbal – unmediated by technology. cf. *CMC*.

FTP — Acronym for ‘File Transfer Protocol.’ As a noun, the communications *protocol* used for transferring *files* across the *Internet*. As a verb, the act of transferring a file from one computer to another using FTP.

Gateway — A physical *network* connection that permits the passage of information between two otherwise incompatible networks.

Geek — A term similar to *nerd*, but slightly less pejorative in tone.

Gigabyte — 1024 *megabytes*. See also *terabyte*.

Gopher — An *Internet*-based information *protocol* developed at the University of Minnesota in the US. It was designed for the university’s campus information system, and presents information, generally in a text-only format, in an easy to navigate fashion. Gopher was rendered largely obsolete by the arrival of the *World Wide Web*.

GUI — Acronym for ‘Graphical user interface.’ A technology for interacting with a computer that involves pictorial (graphical and visual) representations of information such as windows, icons and so on. *Apple’s MacOS* and *Microsoft’s Windows* are the two most popular computer GUIs. Pronounced ‘gooey.’

Guru — In general terms, a *computer* expert. *UNIX* experts are typically referred to as gurus in polite company.

Hacker — Although this term has come to refer to a ‘*computer* vandal,’ or ‘one who breaks, unauthorized, into other peoples’ computer systems’ in the popular media, it does not have such negative connotations in computer circles. Rather, a ‘hacker’ has traditionally meant a computer *programmer* (not a mere *user*) of breathtaking technical and creative proficiency. Steven Levy offers a sympathetic portrayal of hackers, and the motivations that drive them, in his 1984 book of the same name. (Levy, 1984.) See also *nerd*, *geek*, *guru*, *wizard*.

Handle — An *online* nickname. Drawn from the slang of CB radio users; more

common in the BBS world than the Internet.

Hard disk — A *mass storage* medium used on most modern *computers*.

Hardware — The physical, tangible, components of a *computer*. What computer programmers blame when the computer doesn't work. cf. *software*.

Home page — A *Web page* designed as a starting point for exploration of information. Since all Web pages are interlinked seamlessly (they are *hypertext*) there is nothing technically special about a home page — it is simply set up by a Web page designer as being the arbitrary starting point for a given set of pages.

Hop — The number of discrete *nodes* travelled through in order to go from one *network host* to another is referred to as the number of hops.

Host — A *computer* that sits on (ie.: is connected to) the *Internet* and which responds to and services *client* requests.

HTML — Acronym for '*hypertext* markup language.' The markup language, or set of text-based tags, that describe how a *<I> Web page</I>* is built. The underpinnings of a Web page. A *Web browser* takes raw HTML code and renders it into a page viewable by the *user*.

HTTP — Acronym for '*hypertext* transfer protocol.' The network *protocol* that defines the way in which the *World Wide Web* works. A *URL* that starts with 'http:' is thus always a *Web page* of some kind.

Hypertext — Information stored in an interlinked non-linear format. Rather than being presented information in a linear, serial, fashion, a person reading hypertext information can select individual links and view connected pieces of information instantly. It is up to the author of the hypertext document to define these links. The *World Wide Web* is based on this concept.

Human-readable — A *computer program* in a form that people, given sufficient training or obsessive interest, can understand. Human-readable information must be converted into *binary* data before it can be used by a *computer*. Note that 'human-readable' is a pretty loose and relative concept when it comes to most computer languages, because computer *source* code is only comprehensible by a *programmer* who understands the language. (eg.: 'if (\$var =~ /n.*\./i) { ' is considered human-readable, whereas '10011101001011' or '4E 65 69 6C 20 4B 2E' is not.)

Information highway — *Cyberspace*, or the *online* world, as popularized by US politicians, advertisers and the like. Intended to conjure up comfortable images of freedom and travel, but perhaps ironically appropriate in more ways than one. Thus, by overextension, ‘information superhighway’ and ‘the Infobahn.’

Internet — The loose, amorphous, international computer network of networks based on *TCP/IP* networking standards.

Interpreted Language — A computer language turned into a *binary* form usable by a *computer* from its original *source code* by a computer each time it is run. An interpreted language is somewhat easier to work with than a *compiled* one, but tends to be slower. See also *Java*, *JavaScript*.

Intranet — A private *network*, usually based on *Internet protocols*, that is not publicly accessible from the actual Internet. Intranets are generally private networks run by corporations for their own internal use.

Invasion — To take over a given discussion space (eg.: *email*, *Usenet* newsgroup, *IRC* channel, etc.) by *posting* a barrage of irrelevant or off-topic messages, generally with malicious or vexatious intent.

IP — An acronym for either ‘Information Provider’ or ‘*Internet Protocol*.’ In the context of community networks an information provider is a local community organization that has information hosted by the community net. For an explanation of the Internet Protocol see *IP address*, *IP name* and *TCP/IP*.

IP Address — Computers on the *Internet* are identified by a unique numeric address: the ‘IP number’ or ‘IP address.’ This number consists of, at present, four numbers separated by dots, such as 207.102.64.2, and is thus sometimes also called a ‘dotted quad address.’ Since IP numbers are not easy for people to remember, computers also have unique *IP names*. Software is used to translate these names into the equally unique IP address. The Internet is growing so quickly that the traditional dotted quad number space is rapidly being used up. Accordingly the next two to three years will see the implementation of six-digit number spaces instead. cf. *IP name*.

IP Name — Computers on the *Internet* are identified by a hierarchically-structured unique network name; the ‘IP name’ or ‘domain name.’ A typical IP name is the Vancouver CommunityNet’s Web server, which is ‘www.vcn.bc.ca’. Note that the name is hierarchical from left to right. ‘bc’ refers to British Columbia

and 'ca' refers to Canada. cf. *IP address*.

IRC — Acronym for '*Internet* relay chat.' An *Internet*-based communications system that permits people from across the world to hold real-time conversations online, in a text-only form. IRC areas are divided into named 'channels,' and any *user* can open his or her own channel. It was developed by amateur hobbyists and is thus not a commercial service. IRC can be a fascinating way to meet people. It is also a tremendous way to consume vast quantities of time effortlessly.

IRL — Acronym for 'In Real Life.'

ISO Latin-1 — An *ASCII* derivative supported by many *Web* applications and defined by the International Standards Association (ISO). Permits the display of commonly-used accented characters required by most Western European languages.

ISDN — Acronym for 'integrated services digital network.' A technology that permits use of regular telephone lines as a fairly high-speed *digital computer network* link. ISDN connections are faster than *modem* connections over the same copper wires, because ISDN is pure digital — there is no *bandwidth* loss resulting from the conversion from digital to analogue and back to digital. ISDN typically runs from 56 Kbps to 128 Kbps, depending on the configuration. cf. *ADSL*.

ISP — Acronym for '*Internet* service provider.' A commercial operation that provides dialup access to the Internet.

Java — An *interpreted* computer language developed by Sun Microsystems. Currently touted as a very exciting multi-platform way to run information over the *Internet*. Frequently hyped beyond recognition.

JavaScript — A simple *interpreted* computer language developed by *Netscape* Communications, Inc. for use with its Navigator *Web browser*.

Kbps — Kilobits per second. See also *bps*.

Kilobyte — 1024 *bytes*. See also *megabyte*.

LAN — Acronym for 'Local Area Network.' A small *computer network* that might span an office or several floors of a building. Pronounced 'lann.' Contrasts with a WAN, or 'Wide Area Network,' though this latter term is falling into disuse.

Listserv — See *mailing list*.

Login — From ‘log in.’ (ie.: sign into a log book, etc.) In variable senses, as a noun, verb and adjective. Refers to the process of signing on to a given *computer* system by typing in one’s *user ID* and password.

Lurk — To read public discussions online without making any contributions; the act of silent reading without participating actively through the *posting* any public comments.

Lurker — One who *lurks*.

Lynx — A text-only *Web browser*, originally developed at the University of Kansas in the US. Now supported by a team of volunteer enthusiasts worldwide. Lynx forms the technical basis for the *menu* systems used by many Canadian *community networks*. The name is a pun on the word ‘links.’

Mailing list — Using *email* as a one to many medium rather than one to one. A mailing list, sometimes called a listserv (from the name of a popular program used to manage mailing lists) is a list of email addresses stored on a host computer. Sending a single message to a given mailing list address will result in a copy of the message being sent to each member of the list. Email lists are thus a discussion medium or a broadcast system, depending on who has the capacity to send messages out to the list. Sometimes called a mail reflector.

Mass storage — Data storage on a system that is non-volatile in nature. *Hard disk* drives and floppy disks are both forms of mass storage, as are tapes and *CD-ROMs*. They are ‘non-volatile’ because they retain data even when the *computer’s* power is switched off.

Matrix — Usually ‘The Matrix.’ Rarely used owing to its pretentious tone. In general terms the *Internet*, using terminology drawn from William Gibson’s speculative fiction novels. See also *The Net*.

Mbps — Megabits per second. See also *bps*, *Kbps*.

Megabyte — 1024 *kilobytes*. See also *gigabyte*.

Menu — In a text-only system a menu is a list of choices, frequently numbered like menus in some restaurants, displayed on-screen. The *user* can then select a menu item and the *computer* will respond by carrying out the appropriate command.

Microcomputer — Generally speaking, a *personal computer*. A *digital computer* small enough to be portable, designed for personal use. cf. minicomputer.

Microsoft Windows — A *GUI-style operating system* produced by US-based Microsoft, the world's largest software company. Windows dominates the home and business markets.

Minicomputer — A large, usually *multi-user, computer*, perhaps the size of a refrigerator. A term that dates back to the 1960s, when computers were hulking giants ('mainframes') that filled entire rooms. Minicomputers are becoming increasingly rare and obsolete. cf. microcomputer.

Modem — A device that converts the *digital* information used by computers into an audible *analogue* form that can be transmitted down regular voice telephone lines. A contraction of 'modulate/demodulate.' Common modem speeds are 14.4 *Kbps* (kilobits per second) and 28.8 *Kbps*. Modems are used in pairs — one at each end of the telephone line. Pronounced 'mob-dum.' cf. *cable modem*.

MU* — Any of many different types of text-based interactive computer games. MU* stands for multi-user, with the asterisk as a 'wildcard' that represents any character. MU*s include MUDs, MUSHes, MUCKs and MOOs.

Multi-line — In general terms, more than one line. Specifically, a system supporting more than one data *dialup* telephone line.

Multimedia — In a general sense *computer* technology that includes more than one information medium. Specifically, the contemporary marketing buzzword that means a computer is capable of displaying text, showing static pictures, playing and recording sound, perhaps showing *digital* video and so on.

Multiplex — To send more than one data stream down a single physical connection. For example, a telephone trunk line can carry many hundreds of thousands of simultaneous telephone conversations by multiplexing the signals onto the same line.

Multi-user System — Any *computer* capable of supporting more than one *user* simultaneously. Such systems are frequently based around the *UNIX operating system*. In contrast to a *personal computer*, which can normally support only a single person at any time. *Community networks* run multi-user systems to which their users can connect in order to post and retrieve information.

NCSA Mosaic — The first graphical *Web browser*, developed by the US National

Center for Supercomputing Applications in Illinois. Much of the original team that wrote Mosaic left the NCSA and went on to write *Netscape Navigator*.

Nerd — A computer expert by aptitude and not mere training. Usually male, under the age of 35 and socially inept; a person whose tremendous skill with operating or designing computer hardware or software is exceeded only by his, rarely her, passionate love of the technology. See also *hacker*.

Net — Short for *network*. When capitalized, as in 'The Net,' usually refers to the *Internet*.

Netiquette — Portmanteau word, derived from 'network etiquette.' Socially appropriate online behaviour; online norms and conventions for discourse.

NetNews — See *Usenet news*.

Netscape Navigator — Currently the world's most popular graphical *Web browser*, developed by Netscape, Inc.

Network — The entity formed by two or more *computers* and the links between them that carry information. The term refers both to the physical communications infrastructure and to the abstract conception of the interlinked *hardware*.

Network Computer — An idea currently being promoted by Oracle, Sun Microsystems and other large companies. Essentially a network computer (NC) is a stripped-down personal computer without any form of *mass storage*. The NC relies on an *Internet* connection for both user data storage and access to applications. With the price of personal computers dropping it is not clear if the NC model is necessarily the vision of the future. cf. *personal computer*.

Newbie — A person new to *online* systems who is thus unlikely to be familiar with the norms, conventions and general *netiquette* of CMC.

Newsgroup — A public discussion area, frequently distributed internationally, using the *Usenet system*.

Node — A given physical device on a *network*.

NPTN — National Public Telecomputing Network. A US-oriented non-profit organization based in Cleveland, Ohio, that was formed to bring *community networks* together, and to help direct some of their information content. cf. *Telecommunities Canada*.

Online — In general terms, being connected to a given *network* or linked using some form of *CMC*. Thus a computer that is online is one that is somehow connected to a network. A person who is online is one who happens to have access to a properly-connected computer at a given moment. Offline is its antonym.

Operating System — The complex suite of *software* used by a *computer* to manage information and which forms the basic working environment of the system. *UNIX* is an example of an operating system, as are the *MacOS* and *Microsoft Windows*. The operating system generally works behind the scenes and is usually not manipulated directly by the *user*. A *program* written to run under one operating system generally will not run under another operating system unless it is specifically rewritten to do so. This rewriting of a program for another operating system is known as ‘porting.’ cf. *application* software.

Packet — A small, self-contained discrete datum transmitted over a network. See *packet-switching network*.

Packet-switching network — A *network* which operates by dividing each piece of information to be sent into discrete *packets*. These packets are then sent individually across the network and reassembled, in order, at the information’s destination. The *Internet* uses the packet-switching paradigm.

Personal Computer — A small (desktop) *microcomputer* designed for use by a single *user*. As an acronym, ‘PC,’ the term frequently refers to a personal computer that runs Microsoft’s MS-DOS (disk *operating system*) or *Microsoft’s Windows* GUI. cf. *network computer*, *multi-user system*.

Petabyte — 1024 *terabytes*.

Pirate — As a noun, one who copies and/or distributes copyrighted commercial *software* illegally. As a verb, the act of copying or trafficking in such software. Money does not have to change hands when pirating. See also *warez*.

Platform — The concept of an operating *environment* based on a specific *operating system* and a *computer hardware* technology. The *MacOS* is a platform, as is *Microsoft Windows*. Both support a variety of *applications*. See also *operating system*.

Platform dependence — A *computer* program that can run under only one *operating system* is said to be platform dependent. A program that can operate

under more than one operating system is said to be platform independent. *Web* technology is platform independent, as *Web pages* can be accessed by a variety of different and otherwise incompatible computers.

Platform independence — See *platform dependence*.

Player — On a *MU**, a human being. See also *character*.

Point of failure — Potential point within a system vulnerable to failure. For example, on a given network all *traffic* passes through a single *router*. The entire *network* would be out of commission in the event of a router failure, and thus the router would be considered a single point of failure. *Community networks* frequently have many single points of failure because they cannot afford the redundant *hardware* necessary to avoid them.

Post — As a noun, a single message from a *user*, made available to a public forum such as *Usenet news* or an *email mailing list*. Synonymous with a 'posting.' As a verb, the act of putting such a *post* online.

Posting — See *post*.

POTS — Acronym for 'Plain Old Telephone Service.' Voice-oriented communications, based on traditional *analogue* telephone technology.

PPP — Acronym for 'Point to Point Protocol.' A *network protocol* that, amongst other things, permits a *personal computer* to access the Internet directly. A *SLIP* or PPP connection is generally required for a graphical *Web browser* to work with a personal computer.

Production values — A term derived from television, film, etc. The æsthetics and quality of presentation of given information content. Note that the concept does not really measure or describe emotional, social or intellectual value. A big-budget Hollywood motion picture is said to have high production values; an amateur home movie of baby's first steps shot with a handheld camcorder is said to have low production values. Right now the *Web* is something of a leveling influence for CMC, because it is possible for a creative person with modest tools to build a *Web page* with production values on par with anything a wealthy media conglomerate can create. This is changing; a process accelerated by increased adoption of complex software such as *Java* and *multimedia* technology, especially video.

Program — A set of intangible instructions that tells a *computer* how to operate.

Computer programs are also known as *software*.

Programmer — One who writes *computer programs*. Fans of the art frequently prefer to be called *hackers*, because the word ‘programmer’ invokes images of corporate drones in shirts and ties churning out *software* for accounting companies.

Propagate — To travel by being replicated across a *network*. Propagation implies that identical duplicate copies of the original source material are made, not that a discrete package of information travels unaltered. (this is analogous to disseminating plant cuttings, from which the word propagate originates.) This may sound sinister, but is the way in which a *Usenet posting* is made available across a *distributed network* system. Also refers to the way in which network *IP names* travel over a network.

Protocol — A suite of instructions and rules that define the way *computers* can communicate with each other and exchange data. Two computers that support, or ‘speak,’ the same protocol should be able to exchange information, even if they are very different computers using different *operating systems*.

Public access site — A *terminal* or networked *computer* placed in a public location so that anyone – even someone who can’t afford a *home computer* – can access a given system. *Community networks* frequently sponsor or encourage public access terminals or public access sites.

RFC — Acronym for ‘Request for Comment.’ The standards upon which the Internet is based, including all of its common *protocols*, are described in numbered documents modestly known as RFCs. They are published and coordinated by the Internet Engineering Task Force (IETF).

Root — In the parlance of the *UNIX operating system*, root is either the base level of a document hierarchy or a *system administrator* who has complete access to the system. A person with root access can modify or delete any *file* on the system, restart the machine, remove any other *user*, etc. By analogy to the root of a tree.

Router — A *computer* that directs *network traffic* from one *host* to another and is not directly accessible to *users*. A *digital traffic cop*.

Server — A *computer* accessible via a *network* that ‘serves’ out information to computer *clients* upon request. cf. client.

Set-top box — The concept of building an information system based on small boxes that reside atop ordinary household televisions, much like a cable television converter. The televisions would then serve as displays for the *computers*. The idea was very popular in the 1980s but failed to go anywhere. However recent interest in the *network computer* has given the idea a new proverbial lease on life.

SIG — Acronym for ‘Special Interest Group.’ In the context of community networks SIGs are volunteer-run discussion areas which focus on specific topics of interest to its members. Pronounced ‘sigg.’

Site — A given *computer* on a *network* that is accessible to *users*. Sometimes refers to a common set of *Web pages* by extension. (eg.: ‘check out the CommunityNet — it’s a great site!’) Frequently misspelt ‘sight.’

SLIP — Acronym for ‘Serial Line Internet Protocol.’ A simple *network protocol* that permits a *personal computer* to access the *Internet* directly. A SLIP or PPP connection is generally required for a graphical *Web browser* to work with a personal computer.

Smart — A device equipped with a *CPU* and thus able to process information. cf. *dumb*.

Smiley — The :) or :-) symbol; a kind of *emoticon*. (turn your head to the left and look at them again if you don’t recognize them.) Used in text-based CMC to indicate humour, etc.

Snail mail — Derogatory or jocular term for traditional physical paper mail, (eg.: Canada Post) frequently used by aficionados of *email*.

Software — The intangible instructions that make a computer’s *hardware* operate in a specific fashion. Synonymous with a ‘computer *program*.’ What hardware designers blame when the computer doesn’t work. cf. *hardware*.

Source code — A *computer program* in its original, *human-readable* form. Source code is turned into *binary* code (ones and zeroes) which can be used by a computer in different ways depending on whether the language is *compiled* or *interpreted*.

Spam — As a noun, an irrelevant message (frequently commercial advertising) *cross-posted* to many public fora (eg.: *Usenet* groups) simultaneously. As a verb, the act of posting such spam. The term is derived, obscurely, from a popular

Monty Python comedy sketch that celebrates the pleasures of consuming a certain tinned meat product.

Synchronous communications — Communications that requires both parties to be connected simultaneously. Online examples of synchronous communications include *IRC* and *UNIX* talk. Telephone conversations are also synchronous in nature. cf. *asynchronous*.

Sys-admin — See *system administrator*.

Sysop — Portmanteau word for 'system operator.' See *system administrator*.

System administrator — Person who maintains a given multi-user system and who usually has a great deal of control over the information on the system. In the world of BBS the term 'sysop,' or 'system operator' is used. It is considered a major faux pas to refer to a UNIX sys-admin as a sysop.

TCP/IP — Acronym for 'Transmission Control Protocol/Internet Protocol.' The two networking *protocols* that form the common base for communications on the *Internet*. Any computer that 'speaks,' or supports, TCP/IP and is physically connected to the Internet is said to be 'on the Internet.' TCP/IP was originally developed by the US Advanced Research Project Agency (ARPA) but is now an open public standard, not directly controlled by any single government or corporation.

Telco — Contraction of 'telephone company.' Providers of *POTS*.

Telecommunities Canada — A Canadian non-profit organization that aims to be the umbrella organization for all Canadian community networks. Unlike the *NPTN* it is a 'network of networks' rather than an organized network of affiliates. cf *NPTN*.

Telephony — Generally, voice-oriented communications technology as a whole. The stress is on the second syllable, not the the third, when spoken aloud.

Teletype (TTY) — Archaic *digital* technology that used physical printers rather than video monitors for output. Many *multi-user systems* still support glass TTY connections. (ie.: a video terminal pretending to be a teletype.)

Telnet — As a verb refers to the act of connecting to another *computer* across the *Internet*. As a noun it refers to a network *protocol* which supports *character-based* connections between *computers* linked using *TCP/IP*.

Terabyte — 1024 gigabytes. See also *petabyte*.

Terminal — Traditionally a video display device – for output – and keyboard – for input – used to access a *multi-user computer system*. Terminals typically cannot be used as anything other than paperweights unless they are connected to a computer host. (they are *dumb*.) This is in contrast with *personal computers* which can emulate, or pretend to behave like, a terminal or can be used for standalone purposes.

Terminal Dialup — A *data dialup* connection that supports only *character-based terminals* or *personal computers* emulating such terminals. Many community networks support only terminal dialup connections and do not support *SLIP* or *PPP* connections. As a result graphical *Web browsers* are not supported by these systems.

Terminal Server — A device that connects a number of *terminals* (or a number of *modems*) to a *server* or *host*.

Thread — A series of public *postings* on the same general topic that constitute a coherent (in form, if not in content) discussion.

Traffic — By analogy, the data transmitted over a *network*.

Troll — From the fishing term. As a noun, synonymous with *flamebait*. As a verb, to *post* controversial or provocative messages in a deliberate attempt to provoke *flames*.

Unicode — A code similar to *ASCII*, used for representing commonly used symbols in a *digital* form. Unlike *ASCII*, however, Unicode uses a 16-bit dataspace, and so can support a wide variety of non-Roman alphabets including Cyrillic, Han Chinese, Japanese, Arabic, Korean, Bengali, and so on. Supporting common non-Roman alphabets may be of interest to community networks, which may want to promote multicultural aspects of their systems. Unfortunately, Unicode is not widely supported at present, and requires sophisticated (and therefore expensive) graphical *computers*. However it seems likely that the popularity of the coding system will grow in importance, as the cost of high-powered computers continues to decrease. cf. *ASCII*.

UNIX — A powerful, complex *operating system* originally developed by AT&T Bell Labs in the US. It is very popular in scientific, academic and engineering circles and has gained additional prominence in the past few years because it is an

operating system well suited to *Internet server* applications. UNIX, despite appearances, is not an acronym for anything, and is pronounced 'yoo-nix.' Not to be confused with eunuchs.

Upload — In the context of most *community networks*, the act of transferring a *file* from the *user's personal computer* to the community network's host *computer*. cf. *download*.

URL — Acronym for 'Universal Resource Locator.' A URL is a unique *network* address for a given piece of information on the *Internet*. The URL for the online version of this thesis, for example, is either:

<URL:http://www.tela.bc.ca/tela/ma-thesis/> or

<URL:http://www.vcn.bc.ca/people/nkg/ma-thesis/>

Note that you may frequently see URLs written without the angle brackets and text 'URL:' as shown above. However, the brackets and 'URL:' text are defined in RFC 1738 (Berners-Lee, Masinter and McCahill, 1994) and thus are included here for completeness, even though it is rather old-fashioned (almost two years out of date) to do so. See also *HTTP*.

Usenet news — A distributed global discussion system; (a public *conferencing system*) basically text-only. Sometimes called *NetNews*. Developed initially in the United States and, therefore, primarily English-language in origin. Most *community networks* have a 'Usenet news reader' facility that permits users to read public Usenet posts and add their own contributions.

User — A living breathing human being, who happens to be operating a *computer*.

User ID — Short for user identification. The short and cryptic (usually eight characters or fewer) name that identifies a *user* on a system. User IDs are unique on a given *computer* — no two users can have the same user ID. Also known as usernames or *account* names.

UUCP — 'UNIX to UNIX copy protocol.' A system that permits the exchange of *email* and *Usenet news* over temporary *dialup* links, rather than over a permanent 24-hour a day connection. UUCP works on a 'store and forward' principle whereby information to be sent is queued up in storage, then forwarded as soon as a temporary *network* connection is established. Becoming increasingly obsolete with the rise of low-cost *TCP/IP Internet* access.

Videotex — A *computer* technology of the 1980s that uses ordinary television sets, or

similar low-cost monitors, to display computer information. Videotex systems, such as Canada's Telidon™, were a complete commercial failure in North America. Achieved a modicum of success in Europe — eg.: France's Télétel and, to a much lesser degree, the UK's Prestel.

Virtual community — The concept that people form social aggregations based on common interest in an *online* environment.

Virtual reality — The proposed construction of artificial realities in a purely digital realm; not yet technically feasible in the strictest sense. By extension any form of simulated reality — textual or graphical — created using computers. Also used as a marketing term to sell technology that can create two-dimensional representations of three-dimensional space on a *computer* screen.

VT100 — A very popular kind of *character-based terminal* developed by Digital Equipment Corporation (DEC) in the US. Many community networks support VT100 as their basic standard for information display.

Warez — (from 'software') Teenage *software pirate* slang for illegally copied commercial *software*. The extent to which *community networks* should pursue traffickers of commercial software is an important legal and ethical question of great concern to many community nets.

Web — See *World Wide Web*.

Web browser — A *computer application*, which usually runs on a *personal computer*, used to access information on the *World Wide Web*. A graphical Web browser, such as *Netscape Navigator* or *NCSA Mosaic*, is capable of displaying images and text intermingled on-screen. A text-only Web browser, such as *Lynx*, can only display text.

Web page — A *computer* document available over the *World Wide Web*. A Web page is a given *file* stored on a *Web server*, and written in *HTML*. It is transferred from the server to the *client* using *HTTP*.

Wizard — In general terms, a *computer* expert. In *MU*s* specifically a wizard is a person with total control of the *MU** environment. See also *guru*.

World Wide Web — A *distributed hypertext* information system originally developed at CERN, the European centre for particle physics research, in Switzerland. An extremely popular way to distribute information. Based on the concept of interlinked *Web pages*. As the Web is based on a set of publicly available

standards such as *HTTP* and *HTML*, it is a *platform-independent* system. Therefore a Web page can, for example, be created on a Macintosh, stored on a *UNIX* computer and viewed using a *Windows PC*.

Bibliography

This bibliography generally follows the format recommended by the *Publication Manual of the American Psychological Association, (APA) Third Edition*. (American Psychological Association, 1983.)

Many citations in this bibliography are, however, purely electronic in nature. The APA's recommendations have therefore been adapted for use with online citations. URLs (uniform resource locators) are listed, when available, using the format defined in IETF RFC 1738. (Berners-Lee, Masinter and McCahill, 1994.)

The online citations are accurate at the time of writing. However, given the transient and volatile nature of online information, there is no guarantee that the URLs are necessarily still valid. Note also that some of the longer URLs listed are broken across two lines for space reasons. When entered into a Web browser a URL must be one line long only, with no spaces.

Agre, P. (1994, December) Building community networks. *The Network Observer*. Volume 1, N^o 12.

<URL:<http://communication.ucsd.edu/pagre/tno/december-1994.html>>

Aguilar, R. (1996, April 12) Yahoo IPO closes at \$33 after \$43 peak . *CNET News*.

<URL:<http://www.cnet.com/Content/News/Files/0,16,1087,00.html>>

Alinsky, S. D. (1971) *Rules for radicals: a practical primer for realistic radicals*. New York, NY: Random House.

American Psychological Association. (1983) *Publication manual of the American Psychological Association, third edition*. Washington, DC: The American Psychological Association.

- Anderson, R. H., Bikson, T. K., Law, S. A., Mitchell, B. M. (1995) *Universal access to e-mail: feasibility and societal implications*. Santa Monica, CA. RAND.
<URL:<http://www.rand.org/publications/MR/MR650/>>
- Aoki, K. (1994) *Virtual communities in Japan*. (Paper presented at the Pacific Telecommunications Council 1994 Conference.)
<URL:<http://www.vcn.bc.ca/sig/comm-nets/aoki.txt>>
- Association for Progressive Communications (APC) (1996, June 20.) *APC members and partners*. <URL:<http://www.apc.org/members.html>>
- Associated Press. (1995a, September 30) Bug takes computer service down at AOL. *Associated Press*, September 30, 1995.
<URL:http://www.nando.net/newsroom/ntn/info/093095/info512_1.html>
- Associated Press. (1995b, December 19) New York Times renews carriage agreement with America Online. *Associated Press*, December 19, 1995.
<URL:http://www.nando.net/newsroom/ntn/info/121995/info200_3.html>
- Associated Press. (1996a, May 10) Cyberspace sit-in: France's Internet providers protest porn arrests. *Associated Press*, May 10, 1996.
<URL:http://www.nando.net/newsroom/ntn/info/051096/info5_5094.html>
- Associated Press. (1996b, July 26) Online giant backs off; Spanish is OK. *Associated Press*, July 26, 1996. <URL:http://www2.phillynews.com/daily_news/96/Jul/26/national/COMP26.htm>
- Avis, A. (1995) *Public spaces on the information highway: the role of community networks*. (Masters thesis, University of Calgary, 1995)
<URL:<http://www.ucalgary.ca/UofC/faculties/GNST/theses/avis/thesis.html>>
- Barlow, J. P. (1994a) *Jack in, young pioneer!* (Keynote essay for the 1994 Computerworld College Edition.)
<URL:http://www.eff.org/pub/Publications/John_Perry_Barlow/HTML/jack_in_young_pioneer.html>
- Barlow, J. P. (1994b) *John Perry Barlow interview*.
<URL:http://www.eff.org/pub/Publications/John_Perry_Barlow/HTML/kreilsberg_interview.html>
- Barlow, J. P. (1995) *Is there a there in cyberspace?* (Originally published in the *Utne Reader*.) <URL:http://www.eff.org/pub/Publications/John_Perry_Barlow/HTML/utne_community.html>
- Beamish, A. (1995) *Communities online: community-based computer networks*. (Masters thesis, Massachusetts Institute of Technology, 1995)
<URL:<http://alberti.mit.edu/arch/4.207/anneb/thesis/toc.html>>
- Benedikt, M. (Ed.) (1991). *Cyberspace: first steps*. Cambridge, MA: The MIT Press.
- Berners-Lee, T., Masinter, L. and McCahill, M. (Eds.) (1994) *Uniform resource locators (URL)*. Internet Engineering Taskforce RFC 1738.
<URL:<http://ds.internic.net/rfc/rfc1738.txt>>

- Boston Globe (1995, December 1.) AOL modifies vulgar words list to allow 'breast.'
The Boston Globe, December 1 1995.
 <URL:http://www.nando.net/newsroom/ntn/info/120195/info468_4.html>
- Bray, H. (1996, June 21) Two major net breakdowns show fragility of system. *The Boston Globe*.
 <URL:http://nytsyn.com/live/News3/173_062196_114015_13352.html>
- Brody, H. (1996) Session with the cybershrink: an interview with Sherry Turkle.
Technology Review. March-April 1996.
 <URL:http://www.mit.edu/activities/techreview/articles/FM96/Turkle.html>
- Bruckman, A. (1993) *Gender swapping on the Internet*. (Paper presented at the Internet Society, San Francisco, CA, August 1993.)
 <URL:http://www.vcn.bc.ca/sig/comm-nets/gender-swapping.txt>
- Bruckman, A. (1996) Finding one's own in cyberspace. *Technology Review*. January 1996. <URL:http://www.mit.edu/activities/techreview/articles/jan96/Bruckman.html>
- Brunn, S. D. and Leinbach, T. R. (Eds.) (1991) *Collapsing space and time: geographic aspects of communication and information*. London: HarperCollins Academic.
- Busse, T. *et al.* (1996) Controlling the 'Net: Governments encourage self regulation. *Macworld Daily* (online), July 16, 1996.
 <URL:http://www.macworld.com/exclusive/control.7.16.html>
- Carpenter, B. (1996) *Architectural principles of the Internet*. Internet Engineering Taskforce RFC 1958. <URL:http://ds.internic.net/rfc/rfc1958.txt>
- Carroll, J. and Broadhead, R. (1995) *The Canadian Internet handbook: 1995 edition*. Scarborough, Ont.: Prentice Hall Canada.
- Cayley, D. (1994) *Community and its counterfeits*. (radio transcript of interviews with John McKnight) Toronto, Ont.: CBC RadioWorks.
- Cisler, S. (1993) *Community computer networks: building electronic greenbelts*.
 <URL:http://www.vcn.bc.ca/sig/comm-nets/greenbelt.txt>
- Civille, R., Fidelman, M. and Altobello, J. (1993) *A national strategy for civic networking: a vision of change*. <URL:http://www.vcn.bc.ca/sig/comm-nets/national-strategy.txt>
- CNET. (1996) *AOL server goes down*.
 <URL:http://www.cnet.com/Content/News/Files/0,16,2073,00.html>
- Communications Decency Act.(1996) *Title V of the (United States) Telecommunications Act of 1996*, Pub. L. N^o. 104-104, § 502, 110 Stat. 56, 133-35.
 <URL:http://epic.org/free_speech/censorship/cda.txt>
- Cook, G.(1996) Assessing the locus of power in a stratified Internet in context of network renumbering. *The Cook Report 04.12*.
 <URL:http://pobox.com/cook/04.12.shtml>

- Curtis, Pavel. (1992) MUDDING: social phenomena in text-based virtual reality. In *Proceedings of directions and implications of advanced computing (DIAC-92) symposium, Berkeley, May 1992*.
<URL:ftp://parcftp.xerox.com/pub/M00/papers/DIAC92.txt>
- Dobson, C. (Ed.) (1995) *The citizen's handbook: a guide to building community in Vancouver*. Vancouver, BC: Vancouver Citizen's Committee.
<URL:http://www.vcn.bc.ca/citizens-handbook/>
- Durkheim, E. (1933) *The division of labor in society*. (Transl. G. Simpson. Original title *De la division du travail social*.) New York, NY: The Free Press. (Original work published in 1893.)
- Ellul, J. (1990) *The technological bluff*. (Transl. G. W. Bromiley. Original title *Le bluff technologique*.) Grand Rapids, MI: Wm. B. Eerdmans.
- Fernback, J. and Thompson, B. (1995) *Virtual communities: abort, retry, failure?* (Version of paper presented at the annual convention of the International Communication Association, Albuquerque, New Mexico, May 1995.)
<URL:http://www.well.com/user/hlr/texts/VCcivil.html>
- Gates, B. with Myhrvold, N. and Rinearson, P. (1995) *The road ahead*. New York, NY: Viking Penguin.
- Gibson, W. (1984) *Neuromancer*. London: Grafton Books.
- Government of BC. (1996) *BC Communities Connect Program*. Victoria, BC: Government of British Columbia. <URL:http://www.vcn.bc.ca/sig/comm-nets/bc-govt.html>
- Graham, G. (1995) *A domain where thought is free to roam: the social purpose of community networks*.
<URL:http://panizzi.shef.ac.uk/community/canada.html>
- Hafner, K. and Markoff, J. (1991) *Cyberpunk: outlaws and hackers on the computer frontier*. New York, NY: Touchstone Books.
- Harasim, L. (Ed.) (1993). *Global networks: computers and international communication*. Cambridge, MA: The MIT Press.
- Herring, S. (1994) *Gender differences in computer-mediated communication: bringing familiar baggage to the new frontier*. (Talk given at the American Library Association annual convention, Miami, FL, June 27, 1994.)
<URL:http://www.vcn.bc.ca/sig/comm-nets/herring.txt>
- Hiltz, S. R. and Turoff, M. (1993) *The network nation: human communication via computer*. (rev. ed.) Cambridge, MA: The MIT Press.
- Hugessen, J. K. (1996) *Reasons for judgment*. in Vancouver Regional FreeNet Assn. v. Canada (Minister of National Revenue – MNR.) F.C.J. N^o. 914 Court File N^o. A-413-94. <URL:http://www.vcn.bc.ca/vcn/charitable-status/full-text.html>

- Information Highway Advisory Council. (1995) *Connection community content: the challenge of the information highway*. (Final report of the Information Highway Advisory Council.) Ottawa, Ont.: Minister of Supply and Services Canada.
- Jensen, K. B. and Jankowski, N. W. (Eds.) (1991) *A handbook of qualitative methodologies for mass communication research*. London: Routledge.
- Kretzmann, J. P. and McKnight, J. L. (1993) *Building communities from the inside out: a path toward finding and mobilizing a community's assets*. Evanston, IL: Center for Urban Affairs and Policy Research, Neighborhood Innovations Network, Northwestern University.
- Levy, S. (1984) *Hackers: heroes of the computer revolution*. New York, NY: Dell Publishing.
- Light, J. (1996, April) Developing the virtual landscape. *Environment and planning: society and space*. Volume 14, N^o 2. London: Pion Limited.
- Martin, J. (1982) *Viewdata and the information society*. Englewood Cliffs, NJ: Prentice-Hall.
- McLuhan, M. (1964) *Understanding media: the extensions of man*. New York, NY: Signet Books.
- Metro*CAN (Metro Community Access Network) (1994) *Vision and guiding principles*. <URL:<http://cfn.cs.dal.ca/cfn/Chebucto/bp/toc.html>>
- Mitchell, W. J. (1995) *City of bits: space, place, and the infobahn*. Cambridge, MA: The MIT Press. <URL:http://www-mitpress.mit.edu/City_of_Bits/>
- Morino, M. (1994) *Assessment and Evolution of Community Networking*. (Presented at the Apple Conference on Building Community Computing Networks Cupertino, CA. May 5, 1994.) Reston, VA: The Morino Institute. <URL:<http://www.morino.org/ties94sp.html>>
- Mosco, V. (1982) *Pushbutton fantasies: critical perspectives on videotex and information technology*. Norwood, NJ: Ablex Publishing Corp.
- Neumann, P. G. (Ed.) (1996, April 25) AOL censors British town's name! *RISKS Digest: Forum on Risks to the Public in Computers and Related Systems*, volume 18: Issue 7. Thursday 25 April 1996. <URL:<http://catless.ncl.ac.uk/Risks/18.07.html#subj3>>
- Newman, K. (1980) Incipient bureaucracy: the development of hierarchies in egalitarian organizations, in *Hierarchy and society: anthropological perspectives on bureaucracy*. Britan, G. and Cohen, R. (Eds.) Philadelphia, PA: Institute for the Study of Human Issues.
- NPTN (National Public Telecomputing Network.) (1993) *NPTN Blue Book*. Cleveland, OH. National Public Telecomputing Network. <URL:<http://www.vcn.bc.ca/sig/comm-nets/bluebook/>> or <URL:<http://www.nptn.org/about.fn>>

- Ontario Network Infrastructure Program. (1993) *Ontario Network Infrastructure Program*. (information document on the National Capital FreeNet.)
 <URL:http://www.ncf.carleton.ca/freenet/rootdir/menus/freenet/papers/ontario/onip> or <URL:http://www.vcn.bc.ca/sig/comm-nets/strategy/onip.txt>
- O'Reilly & Associates. (1995a) *Defining the Internet opportunity*. (Final study results, 10/1/95. 1994 household income.)
 <URL:http://www.ora.com/research/users/charts/net-income.html>
- O'Reilly & Associates. (1995b) *Defining the Internet opportunity*. (Final study results, 10/1/95. Gender: US users.)
 <URL:http://www.ora.com/research/users/charts/net-gender.html>
- Orwell, G. (1949) *Nineteen eighty-four*. Harmondsworth, Middlesex: Penguin Books.
- Oxford English Dictionary (OED) (1971) *The compact edition of the Oxford English Dictionary, 1933 edition*. Oxford: Oxford University Press.
- Patrick, A.S. (1995). NCF as soup kitchen. Public email list message, 1995.
 <URL:http://www.ncf.carleton.ca/~aa118/HomePage.soup.txt> or
 <URL:http://www.vcn.bc.ca/sig/comm-nets/patrick.txt>
- Patrick, A.S., Black, A., & Whalen, T.E. (1995). Rich, young, male, dissatisfied computer geeks? Demographics and satisfaction from the National Capital FreeNet. In D. Godfrey & M. Levy (Eds.), *Proceedings of Telecommunities 95: The International Community Networking Conference* (pp. 83-107). Victoria, British Columbia, Canada: Telecommunities Canada.
 <URL:http://debra.dgbt.doc.ca/services-research/survey/demographics/>
- Patrick, A. S. & Black, A. (1996a) *Implications of access methods and frequency of use for the National Capital FreeNet*. Draft version 3.5 – 96/04/12.
 <URL:http://debra.dgbt.doc.ca/services-research/survey/connections/>
- Patrick, A. S. & Black, A. (1996b) *Losing sleep and watching less TV but socializing more: personal and social impacts of using the National Capital FreeNet*. Draft version 2.12 – 96/04/12. <URL:http://debra.dgbt.doc.ca/services-research/survey/impacts/>
- Patrick, A. S. & Black, A. (1996c) *Services on the information highway: subjective measures of use and importance from the National Capital FreeNet*. Draft version 1.11 – 96/04/12. <URL:http://debra.dgbt.doc.ca/services-research/survey/services/>
- Piller, C. (1994, October.) *DreamNet: consumers want more than TV overload from the information superhighway – but will they get it?* Macworld, October 1994. pp.96-105.

- Pitkow, J. and Kehoe, C. (1996) *Graphic, Visualization, & Usability Center's (GVU) fifth WWW user survey*.
 <URL:http://www.cc.gatech.edu/gvu/user_surveys/survey-04-1996/>
- Pizzo, S. (1995) Domain name fees benefit defense contractor: SAIC's board of directors is a veritable who's who of retired defense and intelligence officials. *The Web Review*, September 29, 1995.
 <URL:http://www-e1c.gnn.com/gnn/wr/sept29/news/natl/>
- Postman, N. (1985) *Amusing ourselves to death: public discourse in the age of show business*. New York, NY: Elisabeth Sifton Books/Viking.
- Postman, N. (1992) *Technopoly: the surrender of culture to technology*. New York, NY: Knopf.
- Quittner, J. (1994, May) The war between alt.tasteless and rec.pets.cats. *Wired* 2.05. pp. 46-53.
- Raymond, E. S. (1996) *Jargon file 3.3.3*. <URL:http://www.ccil.org/jargon/>
- Reid, E. M. (1991) *Electropolis: communication and community on Internet relay chat*.
 <URL:http://www.vcn.bc.ca/sig/comm-nets/electropolis.txt>
- Reid, E. M. (1994) *Cultural formations in text-based virtual realities*. (Masters thesis)
 <URL:http://www.vcn.bc.ca/sig/comm-nets/cultural.txt>
- Reidlinger, D. and Weir, H. (1995) *The information highway and Canadian education: Discussion of issues and policy recommendations*. Ottawa, Ont.: Minister of Supply and Services Canada.
- Rheingold, H. (1991) *Virtual reality*. New York, NY: Touchstone Books.
- Rheingold, H. (1993) *The virtual community: homesteading on the electronic frontier*. Reading, MA: Addison-Wesley.
 <URL:http://www.well.com/user/hlr/vcbook/>
- Rheingold, H. (1996) *Declaration of Howard Rheingold*, in ACLU et al. v. Reno. United States District Court – Eastern District of Pennsylvania. Civil Action No. 96-963. <URL:http://www.epic.org/free_speech/censorship/lawsuit/rheingold.html>
- Rimm, M. (1995) *Marketing pornography on the information superhighway: a survey of 917,410 images, description, (sic) short stories and animations downloaded 8.5 million times by consumers in over 2000 cities in forty countries, provinces and territories*. <URL:http://trfn.pgh.pa.us/guest/mrstudy.html>
- Roszak, T. (1986) *The cult of information: the folklore of computers and the true art of thinking*. New York, NY: Pantheon Books.
- Schalken, K. and Tops, P. (1994) *The Digital City: a study into the backgrounds and opinions of its residents*. (Paper presented at the Canadian Community Networks Conference, August 15-17, 1994. Carleton University, Ottawa, Canada.) <URL:http://www.vcn.bc.ca/sig/comm-nets/digital-city.txt>

- Schiller, H. (1989) *Culture, Inc.: the corporate takeover of public expression*. New York, NY, Oxford: Oxford University Press.
- Schuler, D. (1995) *Creating public space in cyberspace: the rise of the new community networks*. <URL:<http://www.vcn.bc.ca/sig/comm-nets/schuler.html>>
- Schuler, D. (1996) *New community networks: wired for change*. Reading, MA: Addison-Wesley.
- Shade, L. R. (1993) *Gender issues in computer networking*. (Talk given at Community Networking: the International Free-Net Conference Carleton University, Ottawa, Ont. August 17-19, 1993.) <URL:<http://www.vcn.bc.ca/sig/comm-nets/shade.html>>
- Singapore Broadcasting Authority. (1996) *Annex C: Singapore Broadcasting Authority Internet Content Guidelines*. <URL:<http://www.gov.sg/sba/netreg/annexc.htm>>
- Sloviter, D., Dalzell, S. and Buckwalter, R. (1996) *Adjudication on motions for preliminary injunction*, in *ACLU et al. v. Reno and American Library Association, Inc. et al. v. United States Department of Justice et al.* United States District Court – Eastern District of Pennsylvania. Civil Actions N^o. 96-963 and 96-1458. <URL:http://www.access.digex.net/~epic/cda/cda_opinion.html>
- Sproull, L. and Kiesler, S. (1991) *Connections: new ways of working in the networked organization*. Cambridge, MA: The MIT Press.
- Staten, J. (1995, August 9) Netscape raises more than \$1 billion in IPO. *MacWEEK*, August 9, 1995. <URL:http://www.macweek.com/mw_08-14-95/netscape_ipo.html>
- Sterling, B. (1992) *The hacker crackdown: law and disorder on the electronic frontier*. New York, NY: Bantam Books. <URL:<http://www.cvfn.org/libraries/gutenberg/hack11a/hack11a2.html>>
- Sterling, B. (1994) *Afterword to the electronic release of the hacker crackdown*. <URL:<http://www.vcn.bc.ca/sig/comm-nets/hacker-crackdown.html>> or <URL:<http://www.cvfn.org/libraries/gutenberg/hack11a/hack11aa.html>>
- Sterling, B. and Gibson, W. (1993) Speeches by Bruce Sterling and William Gibson. National Academy of Sciences Convocation on Technology and Education. Washington, DC. May 10, 1993. <URL:<http://www.vcn.bc.ca/sig/comm-nets/sterling-gibson.html>> *audio*: <URL:<http://www.nap.edu/nap/online/techgap/media/gibsonsterling.html>>
- Stoll, C. (1989) *The cuckoo's egg: tracking a spy through the maze of computer espionage*. New York, NY: Pocket Books.
- Stoll, C. (1995) *Silicon snake oil: second thoughts on the information highway*. New York, NY: Anchor Books.

- Tönnies, F. (1957) *Community and society*. (Trans., Ed. C. P. Loomis. Original title *Gemeinschaft und Gesellschaft*.) New York, NY: Harper Torchbooks. (Original work published in 1887.)
- Travers, A. (1996) *Writing the public in cyberspace*. (Doctoral dissertation, University of British Columbia, 1996.)
- Turkle, S. (1984) *The second self: computers and the human spirit*. New York, NY: Simon and Schuster.
- Turkle, S. (1996, January) Who am we? *Wired* 4.01. pp 149-152, 194-199.
- Turkle, S. (1996, Winter) Virtuality and its discontents: searching for community in cyberspace, *The American Prospect* N^o. 24. 50-57.
<URL:http://epn.org/prospect/24/24turk.html>
- VCNA (Vancouver Community Network Association) (1993) *Mission statement*.
<URL:http://www.vcn.bc.ca/vcn/documents/mission.html>
- Von Rospach, C., Spafford, G. and Moraes, M. (1996) *A primer on how to work with the Usenet community*.
<URL:ftp://rtfm.mit.edu/pub/usenet/news.answers/usenet/primer/part1>
- Wasko, J. and Mosco, V. (Eds.) (1992) *Democratic communications in the information age*. Toronto, Ont.: Garamond Press.
- We, G. (1993) Cross-gender communication in cyberspace. *The Arachnet Electronic Journal on Virtual Culture*. July 26, 1994. Volume 2, issue 3.
<URL:http://www.vcn.bc.ca/sig/comm-nets/we.txt>
- Whyte, M. (1996, July 10) Internet service provider awarded charitable status. *The Vancouver Sun*, pp. A1, A10.
- Wilson, K. G. (1988) *Technologies of control: the new interactive media for the home*. Madison, WI: The University of Wisconsin Press.
- Winner, L. (1977) *Autonomous technology: technics-out-of-control as a theme in political thought*. Cambridge, MA: The MIT Press.
- Winner, L. (1986) *The whale and the reactor: a search for limits in an age of high technology*. Chicago, IL, London: University of Chicago Press.
- Winner, L. (1995, September) Who will we be in cyberspace? *The Network Observer*. Volume 2, number 9.
<URL:http://communication.ucsd.edu/pagre/tno/september-1995.html>
- Zimmerman, P. (1994) *PGP user's guide. Volume 1: essential topics*. (Documentation for PGP – Pretty Good Privacy – encryption software.) Boulder, CO: Boulder Software Engineering.