1

PM-1 3½"x4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 1010a ANSI/ISO #2 EQUIVALENT

National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Vous l'avez votre référence

Vous l'avez votre référence

NOTICE

The quality of this microform is heavily dependent upon the quality of the original thesis submitted for microfilming. Every effort has been made to ensure the highest quality of reproduction possible.

If pages are missing, contact the university which granted the degree.

Some pages may have indistinct print especially if the original pages were typed with a poor typewriter ribbon or if the university sent us an inferior photocopy.

Reproduction in full or in part of this microform is governed by the Canadian Copyright Act, R.S.C. 1970, c. C-30, and subsequent amendments.

AVIS

La qualité de cette microforme dépend grandement de la qualité de la thèse soumise au microfilmage. Nous avons tout fait pour assurer une qualité supérieure de reproduction.

S'il manque des pages, veuillez communiquer avec l'université qui a conféré le grade.

La qualité d'impression de certaines pages peut laisser à désirer, surtout si les pages originales ont été dactylographiées à l'aide d'un ruban usé ou si l'université nous a fait parvenir une photocopie de qualité inférieure.

La reproduction, même partielle, de cette microforme est soumise à la Loi canadienne sur le droit d'auteur, SRC 1970, c. C-30, et ses amendements subséquents.

Manifesting Destiny: The Colonization of Cyberspace

by

DANIEL M. DOWNES, B.A.

**A thesis submitted to
the Faculty of Graduate Studies and Research
in partial fulfilment of
the requirements for the degree of**

(Master of Arts)

School of Journalism and Communication

**Carleton University
Ottawa, Ontario
April 18, 1993**

© copyright

1993, Daniel M. Downes

National Library
of Canada

Acquisitions and
Bibliographic Services Branch

395 Wellington Street
Ottawa, Ontario
K1A 0N4

Bibliothèque nationale
du Canada

Direction des acquisitions et
des services bibliographiques

395, rue Wellington
Ottawa (Ontario)
K1A 0N4

Your file Votre référence

Our file Notre référence

The author has granted an irrevocable non-exclusive licence allowing the National Library of Canada to reproduce, loan, distribute or sell copies of his/her thesis by any means and in any form or format, making this thesis available to interested persons.

L'auteur a accordé une licence irrévocable et non exclusive permettant à la Bibliothèque nationale du Canada de reproduire, prêter, distribuer ou vendre des copies de sa thèse de quelque manière et sous quelque forme que ce soit pour mettre des exemplaires de cette thèse à la disposition des personnes intéressées.

The author retains ownership of the copyright in his/her thesis. Neither the thesis nor substantial extracts from it may be printed or otherwise reproduced without his/her permission.

L'auteur conserve la propriété du droit d'auteur qui protège sa thèse. Ni la thèse ni des extraits substantiels de celle-ci ne doivent être imprimés ou autrement reproduits sans son autorisation.

ISBN 0-315-84054-4

Name Daniel Downes

Dissertation Abstracts International is arranged by broad, general subject categories. Please select the one subject which most nearly describes the content of your dissertation. Enter the corresponding four-digit code in the spaces provided.

Mass Communication

SUBJECT TERM

0708

U.M.I.

SUBJECT CODE

Subject Categories

THE HUMANITIES AND SOCIAL SCIENCES

COMMUNICATIONS AND THE ARTS

Architecture 0729
Art History 0377
Cinema 0900
Dance 0318
Fine Arts 0357
Information Science 0723
Journalism 0391
Library Science 0399
Mass Communications 0708
Music 0413
Speech Communication 0459
Theater 0465

EDUCATION

General 0515
Administration 0514
Adult and Continuing 0516
Agricultural 0517
Art 0273
Bilingual and Multicultural 0282
Business 0688
Community College 0275
Curriculum and Instruction 0727
Early Childhood 0518
Elementary 0524
Finance 0277
Guidance and Counseling 0519
Health 0680
Higher 0745
History of 0520
Home Economics 0278
Industrial 0521
Language and Literature 0279
Mathematics 0280
Music 0522
Philosophy of 0998
Physical 0523

Psychology 0525
Reading 0535
Religious 0527
Sciences 0714
Secondary 0533
Social Sciences 0534
Sociology of 0340
Special 0529
Teacher Training 0530
Technology 0710
Tests and Measurements 0288
Vocational 0747

LANGUAGE, LITERATURE AND LINGUISTICS

Language 0679
General 0289
Ancient 0290
Linguistics 0291
Modern 0401
Literature 0294
General 0295
Classical 0297
Comparative 0298
Medieval 0316
Modern 0591
African 0305
American 0352
Asian 0355
Canadian (English) 0593
Canadian (French) 0311
English 0312
Germanic 0314
Latin American 0312
Middle Eastern 0314
Romance 0314
Slavic and East European 0314

PHILOSOPHY, RELIGION AND THEOLOGY

Philosophy 0422
Religion 0318
General 0321
Biblical Studies 0319
Clergy 0320
History of 0322
Philosophy of 0469
Theology 0323

SOCIAL SCIENCES

American Studies 0323
Anthropology 0324
Archaeology 0326
Cultural 0327
Physical 0310
Business Administration 0272
General 0770
Accounting 0454
Banking 0338
Management 0385
Marketing 0501
Canadian Studies 0503
Economics 0505
General 0508
Agricultural 0509
Commerce Business 0510
Finance 0511
History 0358
Labor 0366
Theory 0351
Folklore 0578
Geography 0366
Gerontology 0351
History 0578
General 0578

Ancient 0579
Medieval 0581
Modern 0582
Black 0328
African 0331
Asia, Australia and Oceania 0332
Canadian 0334
European 0335
Latin American 0336
Middle Eastern 0333
United States 0337
History of Science 0585
Law 0398
Political Science 0615
General 0616
International Law and Relations 0617
Public Administration 0814
Recreation 0452
Social Work 0770
Sociology 0626
General 0627
Criminology and Penology 0938
Demography 0631
Ethnic and Racial Studies 0628
Individual and Family Studies 0629
Industrial and Labor Relations 0630
Public and Social Welfare 0700
Social Structure and Development 0344
Theory and Methods 0709
Transportation 0999
Urban and Regional Planning 0453
Women's Studies 0453

THE SCIENCES AND ENGINEERING

BIOLOGICAL SCIENCES

Agriculture 0473
General 0285
Agronomy 0475
Animal Culture and Nutrition 0476
Animal Pathology 0359
Food Science and Technology 0478
Forestry and Wildlife 0479
Plant Culture 0480
Plant Pathology 0817
Plant Physiology 0777
Range Management 0746
Wood Technology 0746

Biology

General 0306
Anatomy 0287
Biostatistics 0308
Botany 0309
Cell 0379
Ecology 0729
Entomology 0353
Genetics 0369
Limnology 0793
Microbiology 0410
Molecular 0307
Neuroscience 0317
Oceanography 0416
Physiology 0433
Radiation 0821
Veterinary Science 0778
Zoology 0472

Biophysics

General 0786
Medical 0760

EARTH SCIENCES

Biogeochemistry 0425
Geochemistry 0996

Geodesy 0370
Geology 0372
Geophysics 0373
Hydrology 0388
Mineralogy 0411
Paleobotany 0345
Paleoecology 0426
Paleontology 0418
Paleozoology 0985
Palynology 0427
Physical Geography 0368
Physical Oceanography 0415

HEALTH AND ENVIRONMENTAL SCIENCES

Environmental Sciences 0768
Health Sciences 0566
General 0300
Audiology 0992
Chemotherapy 0567
Dentistry 0350
Education 0769
Hospital Management 0758
Human Development 0982
Immunology 0564
Medicine and Surgery 0347
Mental Health 0569
Nursing 0570
Nutrition 0380
Obstetrics and Gynecology 0354
Occupational Health and Therapy 0381
Ophthalmology 0571
Pathology 0419
Pharmacology 0572
Pharmacy 0382
Physical Therapy 0573
Public Health 0574
Radiology 0575
Recreation 0575

Speech Pathology 0460
Toxicology 0383
Home Economics 0386

PHYSICAL SCIENCES

Pure Sciences

Chemistry 0485
General 0749
Agricultural 0486
Analytical 0487
Biochemistry 0488
Inorganic 0738
Nuclear 0490
Organic 0491
Pharmaceutical 0494
Physical 0495
Polymer 0754
Radiation 0405
Mathematics 0605
Physics 0986

General 0606
Acoustics 0608
Astronomy and Astrophysics 0748
Atmospheric Science 0607
Atomic 0798
Electronics and Electricity 0759
Elementary Particles and High Energy 0609
Fluid and Plasma 0610
Molecular 0752
Nuclear 0756
Optics 0611
Radiation 0463
Solid State 0346
Statistics 0984

Applied Sciences

Applied Mechanics 0346
Computer Science 0984

Engineering 0537
General 0538
Aerospace 0539
Agricultural 0540
Automotive 0541
Biomedical 0542
Chemical 0543
Civil 0544
Electronics and Electrical 0348
Heat and Thermodynamics 0545
Hydraulic 0546
Industrial 0547
Marine 0794
Materials Science 0548
Mechanical 0743
Metallurgy 0551
Mining 0552
Nuclear 0549
Packaging 0765
Petroleum 0554
Sanitary and Municipal System Science 0790
Geotechnology 0428
Operations Research 0796
Plastics Technology 0795
Textile Technology 0994

PSYCHOLOGY

General 0621
Behavioral 0384
Clinical 0622
Developmental 0620
Experimental 0623
Industrial 0624
Personality 0625
Physiological 0989
Psychobiology 0349
Psychometrics 0632
Social 0451

The undersigned recommend to the Faculty of Graduate Studies and Research
acceptance of the thesis

Manifesting Destiny: The Colonization of Cyberspace

submitted by Daniel M. Downes, B.A.
in partial fulfilment of the requirements for
the degree of Master of Arts

Thesis Supervisor

Chair, Department of Communications and Media Studies

Carleton University

May 10, 1993

ABSTRACT

This thesis examines the rhetoric of "cyberspace," a new communication environment arising from the convergence of computers and telecommunications.

It traces the roots of discussion on cyberspace to an older tradition of technological discourse that Carey and Quirk have called "future rhetoric."

The thesis analyzes three areas relating to the rhetoric of cyberspace: the political rhetoric of computer hacking on the Internet; the definition of cyberspace in the tradition of utopian and dystopian narratives; the technological promise inherent in discussions of new technologies such as virtual reality.

The author concludes that cyberspace is a set of narrative strategies whose outcome is to aid in the promotion of new technologies. The rhetorical struggle in cyberspace concerns definitions advanced by various interest groups attempting to set boundaries for the emergence, social application, and human uses of new communication technologies.

ACKNOWLEDGEMENTS

The author wishes to thank the Social Sciences and Humanities Research Council, the Natural Science and Engineering Research Council, and the David and Rachel Epstein Foundation, without whose generous support this project could not have been completed.

Thanks also to Michael Dorland for his helpful insights in the early stages of the project and to Paul Attallah whose perceptiveness, in effect, showed the author that his project had a theoretical base and that his theoretical camera had a focus button.

To Chris Dornan I offer my appreciation for his patience both as an advisor for an unusual topic and, more importantly, as a diligent and instructive editor.

My everlasting gratitude to Claire, without whom this never would have happened.

And may all those who are also owed gratitude find their thanks here.

TABLE OF CONTENTS

ABSTRACT.....	ii
ACKNOWLEDGMENTS.....	iii
TABLE OF CONTENTS.....	iv
INTRODUCTION.....	1
1. NEW TECHNOLOGIES AND THE NEW PRAGMATIC IMAGINATION.....	11
2. FAITH IN THE SYSTEM.....	35
I. Political Organization in Cyberspace.....	35
II. The Growth of the Worldnet.....	39
III. Group Fantasies and Mediated Realities.....	48
IV. The Electronic Frontier.....	52
V. Hackers: Heroes or Hoodlums?.....	56
VI. Faith in Technological Systems.....	63
VII. Elite Fantasies and the EFF.....	66
3. IDEOLOGY AND UTOPIA.....	74
I. Defining the Space of Tomorrow.....	74
II. Ideology.....	76
III. Utopia and Dystopia.....	79
IV. Utopian Space.....	82
V. Dystopian Space.....	90
VI. Ideological Space.....	96
VII. The Myth of a Bold Tomorrow.....	102
4. VIRTUAL REALITY AND THE MYTH OF TECHNOLOGICAL SALVATION.....	107
I. Technological Exorcism.....	107
II. Virtual Reality.....	109
III. Human/Machine Interface.....	121
IV. Participatory Evolution.....	126
5. CONCLUSION.....	133
I. Restating the Argument.....	133
II. Further Considerations.....	136
6. WORK CITED.....	139

INTRODUCTION

This thesis was inspired by an apocryphal story I came upon over a year ago about an English monk, Nicholas of Oxford, who, in 1360 "went in the company of others to the most northern islands of the world." According to legend, Nicholas made the trip five times in his lifetime, making it as far as Hudson Bay where he met up with a band of Danish explorers with whom he returned to England to write the mysterious *Inventio Fortunatae*. Columbus, it is reported, threw a tantrum on his maiden voyage to the new world when he could not find his copy of the *Inventio* among his papers. He was forced to make his journey without the monk's narrative as a guide. Today, five hundred years after Columbus made the first tentative steps toward the colonization of the new world, there are persistent rumblings about the discovery of a new, uncharted territory called *cyberspace*.

Writing in 1984, science fiction writer William Gibson described computer cowboys who "jacked in" to the global computer and telecommunications network stealing information and thrilling at the experience of "a consensual hallucination experienced by billions of legitimate operators...a graphic representation of data abstracted from the banks of every computer in the human system" (Gibson, 1984:5). Gibson called his consensual hallucination *cyberspace*.

As the information society develops around an increasingly interconnected system of computers and telecommunications, cyberspace becomes a plausible work environment "predicated on a new hardwired communications interface that provides a direct total sensorial access to a parallel world of potential work spaces" (Tomas, 1992:35). Many imaginative narratives of a hyperconnected world compete for ascendancy in the popular imagination as Gibson's fictional cyberspace has been transplanted as a metaphorical space into the real world of telecomputing. The actualization of computer-mediated work and recreation spaces, it is argued, creates a situation in which the need to see cyberspace as "a general, singular-at-some-level, consistent and democratic 'virtual world' becomes paramount" (Benedikt, 1992:12). Cyberspace, originating in the pages of science-fiction novels, has become an issue in less than ten years not because it actually exists, but because of the perceived need to shape its development within a broader cultural and political framework. Writers and researchers concerned with cyberspace may be the expolorers of a new, social-technological space. However, they may also be presenting a premature description akin to the imaginary landscape of Nicholas. And it is the importance of narratives - the stories told about new technologies - that drove this research. Do we draw a more accurate comparison to 1492 or 1360 when we try to place ourselves on the border of cyberspace?

Cyberspace can be analyzed from three perspectives. First, one can examine the interconnection of computers and telecommunication systems into a globally integrated system which creates the "space" in which cyberspace interactions can occur.

In Gibson's cyberspace, the global communications and computing infrastructure he called "the Matrix" was populated by corporate employees who were the "legitimate" operators but also by "cowboys" who make their way through the vastness of data by directly "jacking in" their nervous systems to the Matrix. Today millions of people all over the world communicate with one another by typing words into computers and sending them out as data through the telephone network. This conglomeration of networks is sometimes known as "the Worldnet" (Rheingold, 1991:198). More often it is called the Internet.

The Internet began as an ad hoc network developed by researchers working for the U.S. Defense Research Projects Agency (ARPA) in the 1970s, designed to allow ARPA researchers to share data, the network, called the ARPAnet, was increasingly used to exchange messages, which in turn helped develop a sense of community between the geographically scattered researchers. As ARPAnet grew outwards to span the entire globe it came to be called the Internet. Internet has been described as the model of what virtual communities can be. Geography is irrelevant so there are no margins or peripheral regions to be excluded by the centre (Rheingold, 1991:125). More important to the original hackers' ethic of decentralized access to information is

the absence of hierarchy on the Internet. In theory, everyone has equal access to the Internet and everyone is free to communicate with as few or as many people as they like.

Internet is a coalition of subnetworks consisting of hundreds of thousands of host computers. It is argued that this informal communications medium, which has grown like a grassroots movement on the back of the formal computer communication network that spans the world, resists control by governments or any central authority, "perceiving attempts at censorship as electronic malfunctions and reconfiguring itself to avoid them. Thus, it is a force for democratization of governments and social change" (Perry and Adams, 1992:22). The perception of the Internet as a last frontier of democratic experience through the unfettered distribution of and access to information, is a common element in the works of those writers who are active in the computer communications community.

The second way to analyze cyberspace is from the perspective of virtual reality. The development of sophisticated virtual reality (VR) technologies has made possible the creation of increasingly complex graphic displays and realistic visual "front-ends" for the world-wide communications network. Cyberspace can be examined as the new post-literate communication environment created by a new medium of communication.

The goal of virtual reality (VR) is to provide "a more intimate 'interface' between humans and computer imagery" (Wooley, 1992:5). Instead of typing words into a keyboard which are printed to paper or flashed on a video display, the operator in a virtual reality system wears a helmet or set of goggles which substitute sense data coming in from the natural world with that produced by a computer. A glove inset with sensors allows the user to move within the computer-generated environment simply by moving a hand. Additional sensors in the helmet continually monitor the position of the user's head and update the visual display according to operator's movements. The feelings that result from interacting with the visual images in this computer-generated illusion create the impression that the operator is immersed in a perfectly believable experience.

Finally, cyberspace can be viewed as a "language game" in which different players attempt to cope with a new technological environment and legitimate their own conception of the new information realm. The Third International Conference on Cyberspace took place in Montreal on the weekend of May 29, 1992. The announcement of the conference included a call for papers dealing with the nature and validity of William Gibson's vision of a post-industrial future where a few later-day hackers break through computer security systems to steal software and data for various corporate clients. One topic that stands out in the call for papers as worthy of further research and discussion is "the costs and benefits of reifying information."

There has been a disturbing tendency to reify the whole idea of cyberspace since the First Conference on Cyberspace held at Austin Texas in 1990.

In 1991, Michael Benedikt edited a collection of papers from that first conference. Acknowledging Gibson as the originator of the term cyberspace, Benedikt provides a number of his own descriptions of what we might be talking about when we use the term cyberspace. These include cyberspace as a new parallel universe, created and sustained by the world's computer and communication lines; a place "where nothing is forgotten and yet everything changes;" a common mental geography, "built in turn by consensus and revolution, canon and experiment;" and, cyberspace as "the realm of pure information" (Benedikt, 1992:1-3). The common thread running through each poetic description is Benedikt's observation that cyberspace is a perceptual space made possible by an interconnected system of computers and telecommunications which has grown to a degree "never seen on the surface of the earth" (Benedikt, 1992:1). Benedikt argues that while a common mental geography has existed in every culture, the technologically advanced cultures "stand at the threshold of making that ancient space uniquely visible and," in the author's opinion, "the object of interactive democracy" (Benedikt, 1992:3). Benedikt's project is to provide an imaginative impetus to the development of cyberspace that challenges the dystopian picture of the future presented in Gibson's dark novels.

To summarize, cyberspace, to the extent that it has already been developed, is the product of two elements. First, the interconnection of computers and telecommunication systems into a globally integrated system creates the "space" in which cyberspace interactions can occur. Second, the development of sophisticated virtual reality (VR) technologies has made possible the creation of increasingly complex graphic displays and realistic visual "front-ends" for the world-wide communications network. The integration of computers and telecommunications provides the possibilities of power in cyberspace while VR represents its imaginative and creative possibilities. However, it is when cyberspace is regarded as a language game that its relevance to communication studies appears most clearly. It can be argued that what is at stake in the social contest to adopt new communication technologies "are new language formations that alter significantly the network of social relations, that restructure those relations and the subjects they constitute" (Poster, 1990:8). It is from this perspective that cyberspace will be analyzed in this thesis.

As a preliminary investigation of the phenomenon of cyberspace, this project will consist of an analysis of the rhetoric of cyberspace. That is, it shall examine the ways in which cyberspace, in its potential development, has been imagined and spoken about. In fact, the analysis is attuned to the type of work these ways of speaking are designed to perform. In describing cyberspace they try to bring it into being according to certain, often unstated, premises. A theoretical position will be presented that

suggests a bridging of the interpretive and critical approaches to communication studies through similarities in post-structuralism and neo-pragmatism. The purpose of this project is to map out the discursive territory of cyberspace and to make some preliminary sense out of a new set of communication relations. The analysis of the language game of cyberspace will be framed on the model of future rhetoric articulated by James Carey in two papers written with John J. Quirk, "The Mythos of the Electronic Revolution" (1970) and "The History of the Future" (1973).

According to Carey and Quirk, the future has been used as a political and cultural weapon for the past several centuries for three political purposes. The corpus of texts written about cyberspace and virtual reality will be examined within the context of these three political purposes. The first political use of future rhetoric is to exhort the public to keep faith with the established order and its particular goals. Here, the rhetorical output of The Electronic Frontier Foundation will be examined as it relates to Bormann's concept of fantasy themes which attempt to structure political realities through the spreading of engaging, dramatic narratives.

The second use of future rhetoric is to promote the fulfilment of an ideology (usually framed around a prophecy of a bold, bright future). Future rhetoric serves as a solvent to move away from present problems and difficulties and constitutes, according to Carey, "a time zone in which the human condition is somehow transcended, politics evaporated, and a blessed stage of peace and democratic

harmony achieved" (Carey and Quirk, 1973:174). Beginning with a discussion of Ricoeur's relation between ideology and utopia, three kinds of narrative spaces will be discussed. First, utopian spaces will be examined as manifestations of modernist, rationalist environments. Second, the fiction of William Gibson will be discussed as a dystopic body of work. Gibson's descriptions of cyberspace have been challenged by those who would create a more optimistic view of cyberspace. This challenge will be examined as a response to Gibson's dark vision, emphasizing Ricoeur's interpretation of Mannheim which suggests that dystopian works and utopian works are different aspects of the same creative impulse. The third narrative space that relates to cyberspace can be defined as heterotopic. Following Foucault's definition, attempts to create an alternative ritualistic sphere of activity will be described.

Finally, future rhetoric can provide the non-technical populace with the opportunity to participate in a *technological exorcism* which serves to reduce feelings of uncertainty in times of confusion. This technological exorcism also relieves the population of feelings of human fallibility by presenting technological solutions to social problems (Carey and Quirk, 1973:174). Under this heading popular accounts of virtual reality will be investigated, arguing that the development of new relationships between representations and the real may divert attention from social and political issues as well as provide new creative and sensory configurations. Here, particular attention will be paid to the post-modern fascination with the dissolution of boundaries between that which is human and that which is mechanical.

Following Carey's view of the political uses of future rhetoric to delineate the sphere of public debate on technological issues, the developing discourse surrounding cyberspace will be shown as a contest to shape an emergent view of new technologies. The dominant view optimistically casts cyberspace as an embodiment of democratic, creative possibilities which ultimately serve to "naturalize" the technology, ignoring political and social contests that shape the development, dissemination and application of new media in ways that seem to contradict the rhetoric.

CHAPTER ONE

NEW TECHNOLOGIES AND THE NEW PRAGMATIC IMAGINATION

Recent writings in post-structuralism and pragmatism suggests the possibility of an interpretive mode of communication analysis that provides insights into a new communicative environment bridging the theoretical positions of post-structuralism and American neo-pragmatism. In particular, Foucault's method of genealogical analysis can be joined with Dewey's view of knowledge as socially constructed and Rorty's view of truth as an historically specific representation with which people cope with changing environments, to suggest a common ground from which to investigate cyberspace. This project is an exercise in cultural criticism. Cyberspace will be examined, following Lyotard, as a language game; as a contest between different social groups each attempting to legitimate structures with which to establish the rules of conduct in a new communication environment. The goal of this game is to establish new or to reinforce old patterns of social relations.

Cyberspace can be linked to the body of utopian texts James Carey calls *future rhetoric*. This future rhetoric serves a useful political purpose in the structuring of debates on issues of public policy and in setting agendas in the public sphere. The aim

of the analysis is to highlight the political potential and pragmatic value of discourses of cyberspace.

Mark Poster argues that the configuration of communication in any given society is an analytically autonomous realm of experience. If cyberspace is the site of new communication relationships, it follows that cyberspace is such an autonomous realm of experience which is worthy of study in its own right. What is at stake, according to Poster, are new language formations that alter significantly the network of social relations, and that restructure those relations and the identities of people in those new social relations (Poster, 1990:8). At the heart of Poster's argument is the belief that a significant mediation through new communication systems can change the structures and the conditions that underlie symbolic interchange. In order to save Poster from the trap of technological determinism it is necessary to account for human choice in the establishment of these new relationships.

As a first step it will be useful to situate the theoretical position of a pragmatic post-structural analysis in the broader context of communication and social research. It is possible to divide social inquiry into three broad paradigms: the administrative paradigm, the interpretive and the critical.

In the twentieth century the dominant paradigm of social science research suffered a crisis in representation whereby the mimetic power of theory to explain phenomena

in the real world faltered. In the social sciences as in the natural sciences it appeared that truth was not objective but produced by consensus and revolution among communities of practitioners. Kuhn (1962) and others exposed the mythologizing aspects and assumptions people hold about science, revealing that science is ultimately political in nature as different paradigms challenge one another for legitimacy. For communication studies, the suggestion that knowledge is socially produced opens the possibility for critical theories of knowledge to move beyond traditional research questions about the flows and effects of communication to more complex questions about the nature of communication and communication systems, about who benefits and controls the media and to what purposes. Once questions of power enter into communication research a synthesis of methods gathered from historical, sociological and cultural analyses is necessary to conduct sufficiently complex investigations.

The administrative paradigm takes the observable behaviour, attitudes and values of the individual as the unit for analysis. The use of empirical, positivist modes of analysis allows researchers to distil universal laws that appear to apply to all human societies. Giddens criticizes the dominant paradigm for its naturalistic attempt to find universal laws in the way that physical science searches for laws, and for the overemphasis on structural analyses of linguistic behaviour in social science research. He argues that functionalist attempts to find universal laws can be rejected in light of Kuhn's insight that even physical laws are social productions. As for the overemphasis on linguistic models Giddens suggests that there are elements of life

experience which are beyond the scope of formal, linguistic models. "All social science," writes Giddens, "depends on understanding, in specific historical circumstances, the relation between knowledgeable activity in the light of convention, and social reproduction brought about in an unintended fashion" (Giddens, 1989:59). An approach to social research is needed that moves beyond the search for universal laws.

John Hall suggests that the study of history represents a decisive base for sorting out sociological approaches to culture using Dilthey, Simmel, Weber and Mead for a coherent approach to social research that focuses on meaning, action, symbols and the interactive unfolding and historically contingent character of social life (Hall, 1990). This perspective is based on social interaction. The goal of such research is to increase intersubjective understanding between people to increase the possibility of consensus. Individuals are seen as products of a social context. Biography as well as social and historical forces combine to shape the individual and knowledge comes about in the individual context, through social interaction. Based on an interactionist perspective a different kind of history emerges in which the focus is not grand patterns but actual life experiences revealing the social nature of the creation and transmission of meaning. Interpretive studies force analyses into the realm of the life world and thus offer a critical basis for the historical study of culture because they point to the situated and emergent meaningful actions of differently located individuals. For communication research the question of how meaning is produced in

a cultural setting becomes an important question. However, for a more complete understanding of how meaning is produced in societies not only must the relations between individuals be accounted for but also the relations between institutions in society. This is the contribution of critical theory based on European Marxist thought.

The critical perspective explores how situated interpretations are linked to the operation of media systems and general economic and symbolic formations which shape the media and peoples' relations to them. Individuals are constrained by social forces as well as by psychological forces. Knowledge is ideological and connected to power relations. The social scientist, recognizing that knowledge production is always vested in relations of power, attempts to uncover the political and ideological implications of knowledge. Critical theory has influenced communications research in two ways. On the one hand with research concerning the political economy of media institutions, and, on the other hand, by focusing attention on the ideological nature of communication in the realm of culture.

The political economy approach argues for a cultural materialism focused on the material determinants of social processes and symbolic exchange. These processes have been brought within the sphere of commodity production by the "industrialization of the mind" (Garnham, 1983:321). Cultural workers are workers and audiences are commodities. The weakness of a strictly materialist view of communication is that it suffers from a reductionist tendency to view all activity

solely as the result of economic determinism. As a result, one form of determinism (historical) is replaced by another (economic). While Garnham calls for a return to political economy and an orthodox Marxist approach to research, Murdock suggests that a bridge from interpretive to critical studies is possible in culture studies.

Murdock argues that the critical interpretive tradition provides a full account of actors' interpretations of consumptive activity and also shows that situated experiences and meaning systems are connected and shaped by wide symbolic social formations.

Taking advantage of the insights provided by the interpretive and the critical perspective creates the possibility of a convergent analysis which might produce a more complex understanding of communicative structures, institutions and behaviour. James Carey argues that communication must examine "the actual social process wherein significant symbolic forms are created, apprehended and used...Our attempts to construct, maintain, repair and transform reality are publicly observable activities that occur in historical time" (Carey, 1989:30). Here, Carey reinforces Raymond Williams' emphasis on the necessity to study economic, political and cultural spheres as the interaction of culture, polity and economy "without any concession to any one of them we may choose to abstract" (Golding and Murdock, 1979:202).

The interpretive tradition incorporates hermeneutics, symbolic interactionism and postmodernism. The concern is with texts and the generation of intersubjective understanding rather than with action. The interpretive tradition of communication

studies is often termed a micro-level theory. Critical theory, on the other hand, concerns itself with the relations of production and has tended to underplay the importance of communication, lapsing into forms of economic or historical determinism. However, the work of writers such as Rorty (1982) and Fraser (1989) suggest that it may be possible to bridge the interpretive approach to communication studies with the critical approach outlined in Williams' call for conjunctural analysis.

To establish a bridge between these two paradigms one must look at those areas of interpretive social thought which contain elements of the activism which characterizes critical theory. Within the interpretive tradition a distinction can be made between what Steven David Ross identifies as two dominant streams of post-Hegelian thought. Ross argues that these two streams are characterized by their view of the future. The first stream runs through continental philosophy through the work of post-structuralism, in particular, the historical analyses of Michel Foucault. The second stream runs through the tradition of American pragmatism. Central to the first position are a distrust of the grand metanarratives of history and the centrality of language in shaping human society.

Foucault discerns several major themes in his definition of postmodernism. First, he emphasizes the intimate relation between knowledge, power and truth. Second, Foucault argues that discourse is inherently fragmentary and historically contingent (Ross, 1990:256). According to Foucault:

The presence or absence of a theory of representation, or, more exactly, the primary character or derived position of that theory, modifies the equilibrium of the system from top to bottom. As long as representation goes without question as the general element of thought, the theory of discourse serves at the same time, and in one and the same movement, as the foundation of all possible grammar and as a theory of knowledge (Foucault, 1972:337).

Ross argues that these ideas are not new. The inseparability of power and truth and the historical contingency of knowledge can be traced to Hegel. Ross suggests that common to much of continental philosophy are a deep ambivalence toward the future and a profound nostalgia for the past. In fact, Hegel argues that the only thing that philosophy can do is to describe the past history of ideas (Ross, 1990:257). The future represents an absolute abyss and a Nietzschean nihilism for which there is no way to prepare.

One difference between continental and pragmatic philosophy lies in the role of knowledge. Both streams of thought argue that truth and knowledge are historically contingent and that ahistorical narratives of philosophy and science are to be distrusted. The pragmatists, however, emphasize the practical nature of knowledge. Knowledge is, for the pragmatist, instrumental, providing the means to act and to accomplish ends. American pragmatism thus emphasizes the importance of the future. According to Dewey, pragmatism "presents itself as an extension of historical empiricism but with this fundamental difference, that it does not insist upon antecedent phenomena but consequent phenomena; not upon the precedents but upon the possibilities of action" (Dewey, 1931:24; in Hardt, 1992:34). The goal of the

pragmatist is to actively participate in the creation of particular social and democratic relations.

There are sufficient similarities between the post-structuralist and the pragmatic strains of post-Hegelian thought that there is material to be gleaned from both sides in looking at cyberspace as a new language game of new linguistic formations. There is, perhaps, more benefit to be gained from approaching a synthesis between pragmatism and post-structuralism from the pragmatic side, although the goal in articulating a pragmatic post-structuralism is to bridge the two into a new form of critical-interpretive analysis. Beginning with Foucault, it is possible to strengthen certain elements of poststructuralism with insights from the history of pragmatism.

For Foucault, discourse analysis is the attempt to uncover the rules and procedures that underlie and legitimate the things people say and believe. Finlay follows Foucault, arguing that whoever "controls or adheres to the discursive procedures condoned by social consensus as 'scientific' or 'reasonable' is already 'within the field of truth' and hence enjoys the acknowledged capacity to generate statements that are accepted as 'true' by that community" (Finlay, 1987:20). This notion appears in Kuhn's notion of societies of practitioners who define what is acknowledged as valid scientific knowledge. Paradigms shift when those notions of valid scientific knowledge change (Kuhn 1962). For Foucault, knowledge is not simply the product of discourse, it is also related to the exercise of power. Foucault argues that "We are subject to the

production of truth through power. We cannot exercise power except through the production of truth" (Foucault, 1980:43; see also Finlay, 1987:127-132; Rorty, 1982:207-8). The rules of discourse in particular situations serve as constraints to participants. The element of power appears by limiting access to discourses of knowledge which, according to Finlay, "legitimate the knowledge and power of certain societies of discourse over others" (Finlay, 1987:131). Foucault is not the only thinker to foreground the relationship between language and power.

Liotard builds a critique of science by explicitly identifying the grand narratives of science as a kind of language game which establishes legitimating protocols. Science develops a self-justifying image of nature, and it also expands its relation to society partially because of the proliferation of computers. Computers make it possible to extend the scientific method of explication to wider ranges of phenomena in society. Science, for Liotard, is a language game, a form of truth confirmed by the community of speakers of that game (Liotard, 1984:47). Liotard emphasizes that in no way are the results of these games universal or objective truths. Positivists, on the other hand, aim to avoid both metaphysical claims and relativism when explaining behaviour:

The focus of research is nature, rather than the human psyche, cognition, or any other source of interpretation. The basis of information is assumed to be invariable...natural laws. Facts are distinguished from values...knowledge is imagined to be synonymous with physical events...Factual knowledge...has an independent existence outside of the individual consciousness (Murphy, 1991:37).

For the positivist, knowledge is available to those who are able to perceive accurately. We are not talking about reality but about our agreed-upon conceptions of reality. In fact, Lyotard argues that the positivist view of knowledge is a form of terrorism that regulates reality and reduces or eliminates competing forms of knowledge or being in the name of truth.

There are a number of discernable similarities between the post-structuralist and the pragmatic positions. Cornell West, in *The American Evasion of Philosophy*, writes that a small-scale intellectual revival is occurring in philosophy under the broad banner of pragmatism. This revival is founded on three elements. First, a general disenchantment with the image of philosophy as a transcendental mode of inquiry. In the same way that science is seen as one of the ways in which we can view the world, philosophy as a way of explaining the world on the basis of truth, beauty and the good is being called into question. There is no longer an essential basis for the notion of truth. Truth becomes, for the pragmatist, a convenient or effective way for people to cope with the world.

Second, American philosophers, as did Foucault, developed a preoccupation with the relation of knowledge and power, cognition and control, discourse and politics. The difference between the continental and the pragmatic philosophies is the ultimately optimistic assessment of the latter view. Styles of knowledge, identities or subjectivities are socially constructed. They are historically situated. For the

pragmatists, this means that if responsibility is taken for these social constructions then a society can shape the kind of world it wants for the future rather than feeling a sense of despair because there is no logical grounding for notions of truth or objectivity.

The third reason for the renewed interest in American pragmatism is that the focus on power returns humanistic studies to the idea of agency. This reflects the pragmatist reaction to the poststructuralist attempt to eliminate the subject. By focusing on power relations, neo-pragmatism also challenges the old humanistic view that elevates agency above social constraints such as class, gender, race and sexual orientation (West, 1989:3-4). Hence, the renewal of pragmatism addresses one of its own weaknesses: an insufficient incorporation of the insights of Marxism and critical theorists throughout the century.

As Lyotard attempted to demystify science by revealing its social construction as a game of legitimation, Dewey attacked philosophy, focusing his critique on the essence of philosophical knowledge. For Dewey, the philosophical problem of reality can be discredited on the level of epistemology. Modern philosophy has deferred to the authority of "knowledge" in the name of science, without questioning this authority or demystifying science. Dewey wrote that reality is the result of social interaction. The problem is not whether there is an epistemological justification for the world out there, beyond the veil of ideas, but rather with the ways in which each individual

goes about dealing and coping with that environment (West, 1989:89). Dewey's notion of reality becomes important when considering the possibility of creating virtual realities. He rejects both correspondence theories of truth and idealist ontologies in favour of informed critical interaction.

The predominant element in Dewey's view of truth, according to West, is social practice. "Ideas are neither copies of the world nor representations linked principally to one another, but rather ingredients for rules and plans for action" (West, 1989:99). Dewey's pragmatism conceives of truth as a species of the good. He recognizes that the procedures that produce valid knowledge are themselves value-laden but he suggests that the social production of truth represents the action of "human beings working in solidarity for the common good" (West, 1989:100). It no longer matters whether there is some essential reality outside consciousness or not. Instead, what matters is how each person perceives and copes with the world and how those perceptions are created and how they create subjectivities in time who act in the best interest of their society.

As a result of casting truth as an ethical concept, the thrust of Dewey's project became primarily educational. He argued that there were major obstacles to creating a public sphere, which he defined as a discursive and dialogic social space in which various social groups could find common ground, where they could reach consensus, and where the practice of democracy could be achieved. These obstacles included: the

mass media which diverted public concern from political concerns; the bureaucratization of politics; the geographical mobility of people; and the cultural lag in ideas, ideals, and symbols in which the established structures of social organization and symbolic representation no longer reflect social reality. The result of such obstacles is dysfunctional communication (West, 1989:105). Therefore, Dewey argued, educational reform was necessary to enable people to develop the critical intelligence needed to make the political decisions that would lead to a participatory democracy.

One can critique Dewey's project on several grounds. His view of culture was homogeneous. He addressed an enlightened American middle class that was on the wane by the time he was writing in the twenties and thirties. His idea of consensus also rings hollow when we consider the disparity between race, gender and social class in the first half of the twentieth century. Lyotard suggests that both the criteria of a homogeneous, liberal culture and the possibility of decision by political consensus are outdated and in need of radical revision.

Although some trace pragmatism as a dominant strain of American social science research (see Hardt, 1992), West argues that pragmatism was never dominant in the academy for several reasons. First, pragmatism preached anti-professionalism. Dewey and James argued against practicing philosophy with a capital "p". Dewey fought against an essentialist philosophy tracing its roots to Plato's division of the subject and

the object. He proposed instead that philosophy was at best a form of social criticism. Second, pragmatism was overshadowed by the rise of logical positivism which would provide the basis of what would become the administrative school of social research. Finally, according to C. Wright Mills, the crisis in American pragmatism was the incorporation and co-option of pragmatism into corporate liberalism in the political sphere and the degeneration of creative democracy into a quest for profit. Mills wrote that the "liberal ideology, as now used by intellectuals, acts as a device whereby he can take advantage of the new career chances but retain the illusion that his soul remains his own" (in West, 1989:128). In other words, the potential social critics bought into the system and shut their mouths.

For the post-structuralist and the pragmatist language is more than simply a tool. According to Murphy, language provides the only access a person has to the world. He states that, for the postmodernist in particular, all people operate "within the language game of society" (Murphy, 1989:40). Feminist theory also argues that language plays a crucial part in structuring social relations. Felski argues that the goal of a feminist critical theory is "to expose the gender biases underlying the most taken-for-granted aspects of social experience" (Felski, 1989:25). However, she emphasizes the risks in a totalizing theory of gender-based criticism. Arguing that French feminism suffers from a tendency to fetishize negativity, marginalization and difference, the danger to feminist critical theory, according to Felski, is to take the realization that discourse is never interest-free to the point where all discourse

becomes a reflection of patriarchal power (Felski, 1989:223). She contends that to simply collapse all distinctions between language and power is to devalue agency and critical intervention and to "reinforce female powerlessness by reinstating women outside language, theory and the symbolic order" (Felski, 1989:222-223).

Like Foucault, the pragmatist believes that knowledge is power. Dewey wrote that language is a tool for coping with reality. The pragmatist drops the notion of truth as correspondence with reality altogether, and says, following Rorty, that modern science does not enable us to cope because it corresponds to reality, it simply enables us to cope (Rorty, 1982:xviii). Lyotard, in a statement that echoes James, claims that truth doesn't speak - it works (in Murphy, 1989:41). Rorty argues that language is not a mediator between subject and object. Language is something that people do.

For Rorty, there are two ways of thinking about truths. First, truth can be conceived as a vertical relationship between various representations and the object they attempt to represent. Seen from this perspective, the closer the representation to its object, the more truthful it can be said to be. Rorty rejects this correspondence theory of truth in favour of a second way of thinking about truth. One can think of truth, not as a vertical relation between the representation and the real, but rather as a horizontal relationship between various representations. Rorty describes this relation as, "the culminating reinterpretation of our predecessors' reinterpretation" (Rorty, 1982:92). This tradition, argues Rorty, is not concerned with the success of a

particular representation in mapping out the "real" but rather in the ways in which representations can be seen as "hanging together." Rorty does not claim that the world is not out there, only that our descriptive language of the world is not the secret language of the world. Our experience of the world indeed can cause us to hold certain beliefs, but these beliefs are elements of human languages, and "human languages are our own creations - creations that change over time and space" (Rorty, 1982:198). He says that this is the difference between seeing truth, goodness and beauty as eternal objects which we seek out and reveal and seeing them as "artifacts whose fundamental design we often have to alter" (Rorty, 1982:92).

Rorty labels the post-structuralist position *textualism*, because of the post-structuralist explanation of phenomena as sets of narratives and metanarratives. He links the textualists to a philosophical lineage traceable back through Hegel to Kant. Although Rorty concurs with the Deweyan notion that words, ideas and language are not mirrors with which we copy the world but rather tools with which we cope with it, he traces the notion of a twentieth century tendency to view phenomena as texts to a version of romanticism which links metaphysical idealism and twentieth-century textualism. The thesis of romanticism states: "that what is most important for human life is not what propositions we believe but what vocabulary we use" (Rorty, 1982:142). That vocabulary is contingent on history, on social circumstance. He traces this romanticism to Kant's suggestion that using the vocabulary of science is simply one of the good things people can do. The second development in romantic

philosophy is made by Hegel who introduces an historical sense of the relativity of principles and vocabularies to a particular place and time. The third step in creating what Rorty calls a literary or textual culture, was taken by both James and Nietzsche who replaced the notion of romanticism with the idea of pragmatism. Instead of hinting that the discovery of vocabularies could bring hidden secrets to light, Rorty argues, James and Nietzsche said that new ways of speaking could help us get what we want (Rorty, 1982:149-50). The importance of action serves as the link between pragmatism and textualism.

Discourse becomes a contest in which critical intervention is possible because of human agency. Thus the pragmatic mode of analysis is useful in its challenge to totalizing forms of discourse, and in spite of the danger that pragmatism perpetuates a view consistent with liberal-humanism. Feminist critical theory warns of the dangers of promoting male-centric narratives but the validity of this warning need not result in the discarding of the model. West suggests that a sophisticated neo-pragmatism would have to "think genealogically about specific practices in light of the best available social theories, cultural critiques, and historiographical insights and to act politically (West, 1989:209). Usually the critical paradigm is considered to be undergirded by the necessity to act towards changing society. Pragmatism shares the compulsion to social reform. West suggests that the lineage of American thought after Dewey is the only hope for the rejuvenation of an American left. Here, then, is a place to approach

the issue of cyberspace within the realm of critical-interpretive communication studies.

Following the neo-pragmatists, the limits of one's actions are defined by what one knows and how one speaks, which are, in turn, defined by what one is permitted to talk about within a community of speakers. Thus, in any language game, what is at stake is the definition of what is discursively allowed. With regard to cyberspace, the struggle over definitions has even greater consequences, since whatever descriptions become dominant in the game will define the shape and character of the new communication environment.

To analyze the language games of cyberspace, this project takes as a model Carey and Quirk's discussion of future rhetoric. Carey and Quirk (1970; 1973) argued that a set of prescriptive narratives of a technological future have functioned to preserve a set of power relations while at the same time fostering the illusion of public participation in the development of that future. Before the discussion of cyberspace can begin, it will be helpful to turn briefly to Carey and Quirk's model of future rhetoric.

James Carey practices a form of philosophical social criticism that is heavily influenced by Dewey. He argues that communication must examine the actual social process whereby people attempt to construct reality through creation and maintenance

of significant symbolic narratives. He places equal emphasis on the symbolic, or narrative, interaction of culture, polity and economy. The most important aspects of Carey's work to the current analysis are the conception of philosophy as a form of cultural criticism and the study of technological development as a form of discursive activity Carey labels *future rhetoric*. Carey provides the model against which it is possible to analyze the discourses of cyberspace as a language game.

According to Carey and Quirk, the modern history of the future begins at the onset of the age of exploration. Armed with the tools and techniques of modern science, "a secular priesthood seized hold of the idea of a perfect future, a zone of experience beyond ordinary history and geography, a new region of time blessed with a perfect landscape and a perfection of man and society" (Carey & Quirk, 1970:173). Having suggested that the idea of the future has a definite history in British and American life, the authors argue that the future has served three distinct functions as a "powerful political and cultural weapon." (Carey and Quirk, 1973:174).

First, the future is often regarded as a cause for a revitalization of optimism. In America, an exhortation to the future has been a standard element of inaugural events. The promise of a sublime technological future is invoked to bless new administrations and projects. Part of this exhortation is an appeal for public confidence in the status quo; the rhetorical invocation "is an attempt to ward off dissent and to embellish cosmetically the body politic with imagery of a greater future for all" (Carey and

Quirk, 1973:175). Carey argues that such exhortations to "discount the present for the future" provide a basis for faith in the "essential rectitude of motives and policy in the midst of the disarray of the present" in much the same way as the notion of the 'invisible Hand of Providence' operated in the dreams of 'heavenly cities' in the eighteenth and nineteenth centuries (Carey and Quirk, 1973:180).

Second, the future, as it was presented in various literary prophecies from Geddes to Toffler, is actively portrayed as the fulfilment of a particular ideology or idealism. "The past and present are rewritten to evidence a momentous changing of the times in which particular policies and technologies will yield a way out of current dilemmas and a new age of peace, democracy, and ecological harmony will reign" (Carey and Quirk, 1973:174). The mission of American ideology is to promote the creation of a universal modern world. The American utopia is a dispensation from history that condones the future orientation of technological determinism. Carey finds in writers such as Toffler, "a portrait of the future as a new realm of dispensation from the consequences of the Industrial Revolution" which "merely places the computer and transistor where the powerhouse generators once held sway as predominant technology" (Carey and Quirk, 1973:187-188).

Finally, Carey and Quirk suggest that the future has acquired a new expression in the development of modern computer technologies. "Here," the authors argue, "the future is a participation ritual of technological exorcism whereby the act of collecting

data and allowing the public to participate in extrapolating trends and making choices is considered a method of cleansing confusion and relieving us from human fallibilities" (Carey and Quirk, 1973:174). Revolutions in technology are presented as having the power to transform the world. Carey, writing in the early 1970s, unwittingly predicts the emergence of virtual reality by suggesting that the revolutionary potential of these improvements in communication devices:

resides in the supposed capacity to transform the commonplace into the extraordinary: to create novel forms of human community, new standards of efficiency and progress, newer and more democratic forms of politics, and finally to usher a 'new man' into history (Carey and Quirk, 1973:190).

Carey, however, emphasizes the fact that despite the evidence that new technologies have failed to resolve the pressing social issues of a century of industrial development, "contemporary intellectuals continue to see revolutionary potential in the latest technological gadgets that are pictured as a force outside history and politics" (Carey and Quirk, 1973:191). This technological determinism appears consistent with the ideology of a cyber-future. Participatory democracy is argued to be on the brink of emergence because of new technologies. Carey argues that "the vision of democracy by electricity has been with us since at least the telegraph and telephone and has been put forward by most writers about the future over the last century" (Carey and Quirk, 1973:191-92).

To summarize Carey and Quirk's model of future rhetoric, the future has been used as a political and cultural weapon for the past several centuries for three political

purposes. First, the future can be used to exhort the public to keep faith with the established order and its particular goals. Second, it has been invoked to promote the fulfilment of an ideology (usually framed around a prophecy of a bold, bright future). Finally, the future can be called upon to provide the general populace with the opportunity to participate in a *technological exorcism* which serves to reduce feelings of uncertainty in times of confusion. This technological exorcism also relieves the population of feelings of human fallibility by presenting technological solutions to social problems (Carey and Quirk, 1973:174). Future rhetoric serves as a solvent to move away from present problems and difficulties and constitutes, according to Carey, "a time zone in which the human condition is somehow transcended, politics evaporated, and a blessed stage of peace and democratic harmony achieved" (Carey and Quirk, 1973:174).

Future rhetoric, for Carey, has some very definite political uses. It can be used to encourage a *false consciousness* that diverts attention away from the real social problems of the day. It invokes a mythical *hand of Providence* to encourage the public to have faith in the essential righteousness of the government and its policies in the chaos of the present, and, perhaps most importantly, the rhetoric of the future serves an antirevolutionary function as the literature provides an alternative to political revolution and provides instead a stimulus for acquiescence (what Ursula Franklin calls a *culture of compliance*)(Carey, 1989; Franklin, 1990).

Turning to the first political function of future rhetoric, the political discourse surrounding the Internet will be discussed as a site of contestatory narratives and elite group fantasies.

CHAPTER TWO

FAITH IN THE SYSTEM

I. Political Organization in Cyberspace.

Cyberspace can be analyzed as the interconnection of computers and telecommunication systems into a globally integrated system which constitutes the "space" in which computer-mediated interactions can occur. However, the integration of computers and telecommunications also suggests possibilities of various social relations in cyberspace. Following Lyotard, cyberspace can thus be viewed as a language game in which different players attempt to develop a new technological environment and to legitimate their own conception of the new information realm.

The game is comprised of a number of players who contest and will into being a type of reality. Different players can be expected to promote different views of what that reality will be. Some are motivated by the technical sweetness of the new technological system, some are motivated by the economic potentials of international markets, and some are motivated by political possibilities. It is impossible to describe all the various players and their interests because of the newness of cyberspace and the vague awareness that it may one day become an important site of social interaction. It is also impossible to predict the eventual outcome of the discursive

contest. However, what can be hoped for is a map of the field and an identification of some key players, tendencies and thrusts in the game.

This chapter begins an examination of cyberspace in light of Carey's first category of future rhetoric - as an exhortation to a public to keep faith in the legitimacy of the system. A new technological system of computer-mediated communication exists in the international network of computer networks known as the Internet, which will be presented as the sight of competing discourses of control and development. While Rorty describes language as a strategy with which we cope with reality, cyberspace can perhaps be better understood as what Nimmo and Combs define as a mediated-political reality whereby the social fantasies of various interest groups are promoted to become new realities. What is at stake in the game are the rules of behaviour in a new communication environment.

Future rhetoric exhorts the public to keep faith with the established order and its particular goals. The players in the political struggle over cyberspace have been, traditionally, the state, the corporate sector, and a "public" of scientific and academic computing professionals, teachers and students. Over the last decade a number of events have resulted in the rise of a computing lobby whose members are drawn from the existing "public" of programmers, hackers and civil libertarians galvanized by political purpose to influence the development of cyberspace. The interests of this group are most clearly expressed by the Electronic Frontier Foundation, formed in

July 1990, by journalist John Perry Barlow and Mitch Kapor, the co-developer of Lotus 1-2-3 software. The EFF claims to speak for the broader public interest but it can be argued that what the EFF is engaged in is the creation of rhetorical fantasies about the new computer-communications environment. Such fantasies are set up as potential structural narratives aimed at defining the boundaries of cyberspace. The reality of cyberspace today, while dramatic, is much less coherent and manifest than the rhetoric would have one believe.

Barlow has called cyberspace the place where telephone calls take place (Barlow, 1992).¹ This definition, vague as it is, actually captures an essential element of today's cyberspace: it is a place of the imagination, without form or pattern. Cyberspace is the imaginary place created when a teenager connects to a community of like-minded individuals on a local computer bulletin board. It is also the space through which millions of data files are transferred each day across telephone lines to places all over the world. What connects these two activities is the act of transferring digital information over the telecommunication system. This is what constitutes cyberspace today. As it exists now there is only the dim outline of what cyberspace could be or how it might develop. What is at contest is precisely how it will develop.

¹ Henceforth, texts available only in electronic form will be cited as follows: the author of the document followed by the year of copyright. Electronic texts are preceded by an asterisk (*) in the work cited at the end of the text.

Already there are people engaged in new forms of communication. Freenets, in Cleveland, Victoria, Ottawa and other cities across North America, provide limited access to the vast resources of cyberspace to people without access to academic computers. People involved in special interest discussion groups on the Internet play with gender, with personae, and engage in a kind of poststructural play of narrative without identity. In the labyrinth of discussion groups, bulletin boards, and file archives available to almost anyone with a computer, a modem and a connection to the telephone system, it is possible to find information on almost any topic if one is patient enough and resourceful enough to look for it.

There are, as well, groups attempting to stake out territory; to set boundaries in cyberspace as it unfolds. Prominent among these groups are the state and the Electronic Frontier Foundation (EFF). The state wishes to impose order on this new medium. The desire for control is most manifest in the policing of hackers as "rogue element." Against this attitude stands the EFF which, as a special interest group, presents a different conception of the rules that govern cyberspace.

However, despite the brave rhetoric of the EFF, particularly on the part of visionaries such as Kapor and Barlow, that cyberspace is a new place, governed by new rules, if one looks at the terms the state and the EFF use to advance their cases, one perceives that they are similarly steeped in 19th-century American rhetoric. While

the state appeals to the rule of law and order, the EFF appeals to First Amendment freedoms. Both positions are cut from the same rhetorical cloth.

While the discursive struggle is taking place in courts, in specialized journals, in on-line discussions, and in the popular press, the object of the current struggle over metaphorical control over cyberspace is an international set of computer networks collectively called the Internet. To set the stage for the current political debate in cyberspace, a brief description of the history of the Internet is necessary.

II. The Growth of the Worldnet.

In reality, the world's first "virtual" community was a consequence of an ad hoc network developed by researchers working for the United States Defense Research Projects Agency (ARPA) in the early 1970s. The network was an experimental system designed with the assumption that computer and communication networks are unreliable. The military insistence on a network that could withstand partial outages resulted in a system in which any computer could talk with any other with no formal, hierarchical structure (Krol, 1992:11). Originally designed to allow ARPA researchers to share data, the network, called the ARPAnet, was increasingly used to exchange messages, which in turn helped develop a sense of community between researchers in locations scattered around the country. An early researcher in virtual worlds, Myron

Krueger (1977) emphasized the importance of information sharing in the development of computer-mediated communication, stating that, "the act of communication creates a place that consists of all the information that the participants share at that moment" (in Rheingold, 1989:22). In a sense, the ARPAnet community existed only in its interaction over ARPAnet.

The development of the Internet was originally funded by the U.S. Department of Defense and its growth was primarily the result of the establishment of a set of technical standards for digital information transfer dictated by the government. In 1978 the Transmission Control Protocol/Internet Protocol (TCP/IP) was adopted as the network standard by researchers working on the ARPAnet. By 1983 ARPAnet had become a network comprised of university computers as well as the original military network. The system was divided into two separate facilities, one for specifically military research called MILnet, and a second network aimed at academic research on what had been the ARPAnet. At this time TCP/IP was made a requirement on both ARPAnet and the MILnet by the Defense Communications Agency (Adam, 1992:26). A period of unprecedented growth followed as various software and hardware companies developed products which conformed to the TCP/IP protocol.

In the late 1980s responsibility for ARPAnet shifted from the Department of Defense to the National Science Foundation (NSF). The NSF funded "a high-speed network backbone, NSFnet, linking first twelve, now sixteen supercomputer centers

around the U.S." (Fisher, 1991:181). The old ARPAnet was replaced by the NSFnet and the resulting system of small, regional computer networks linked together through the high-speed NSFnet became known as the Internet, after their common communications protocol (Byte, 1992:184). In 1987 the Merit Organization, who managed state-wide network computer systems in Michigan, along with IBM and MCI, won a five - year contract to manage operations on the Internet and to oversee technical upgrades to the system. The three partners established a non - profit joint venture called Advanced Network and Services Inc. (Adam, 1992:26; see also Fisher, 1991:182). By 1992 the Internet had become a constellation of networks comprised of roughly 4,000 sites in the U.S. and another 2,000 host sites in over thirty countries world-wide (of these, over two-hundred and fifty sites are in Canada alone). The Internet community consists of over three million users (Dern, 1992:111; Adam, 1992:26).

Internet is, according to Rheingold, the model of what virtual communities can be. Geography is irrelevant so there are no margins or peripheral regions to be excluded by the centre (Rheingold, 1989:25). However, it is important to remember that international connections to the Internet are extended only to U.S. allies and overseas military bases (Krol, 1992:16). In theory, everyone has equal access to the network and everyone is free to communicate with as few or as many people as they like. Businesses have been excluded from participation on the Internet by policies which excluded or restricted commercial use of the network (Krol, 1992:17,31). To avoid

restrictions on commercial traffic over the Internet Public Data Internets (PDI) have been established in the U.S. which provide users with both access to Internet resources and separate channels of digital communication through which commercial transactions can occur. Public Data Internets are privately owned networks. Individual users are charged for access to network communications. Commercial PDI providers include Advanced Network and Services Inc. (the same consortium of IBM, MCI, and the Merit Organization who won the management contract for the Internet in 1987). Public - access Internet sites include The World, the Portal, and the Point Foundation's network Bulletin board called the Well (Whole Earth 'Lectronic Link). The Well is owned by Stewart Brand, publisher of *The Whole Earth Review* (Dern, 1992:118).

The perception of the Internet as a last frontier of democratic experience through the unfettered distribution of and access to information, is a common element in the works of those writers who are active in the computer communications community. This popular perception serves as the basis of the argument that the Internet is the object of a fantasy about an electronic frontier.

However, the new electronic communities rising out of the growing interconnectivity of digital networks also heighten the fragility of social networks in cyberspace (see Poster, 1990). Why? Because the networks themselves are subject to intrusion and attack by computer hackers and viruses. Hackers, with personal pseudonyms like The Mentor and Lex Luthor, or group labels such as The Masters of

Destruction or Legion of Doom, are presented in the media as forces of chaos, as criminals representing tangible threats to the security or integrity of a technological system.

Early in November, 1988, a virus (a software program that can alter data or erase a computer's memory) was unleashed over the Internet, resulting in one of the most publicized cases of computer crime. The virus, known as the Worm, was written by Robert Morris, a graduate student at Cornell University. Actually, the Worm was not technically a virus. Viruses are programs that reproduce themselves continually until they take up all the memory in a host computer, effectively shutting it down. The Morris Worm was a program intended to travel to each node on the Internet so that Morris could count the number of Internet sites. The problem with the Worm appeared when it was unable to recognize itself in a host computer to which it had already arrived. Thus, what was intended as a prank infected thousands of government and university computers, consequently rendering the Internet dysfunctional (Elmer-Dewitt, 1988:85).

Following Morris' "prankish" unleashing of the Worm, the Internet community divided in a bitter debate over issues of freedom of expression, and access to computer networks. According to Andrew Ross, the virus debate has resulted in a windfall for software producers and the "already fast-growing sectors of the security system industry and the data encryption industry" (Ross, 1991:79). Following the

press coverage of the Internet Worm, hackers came into the broader, public consciousness of American society. Another, more overtly ideological effect of virus-consciousness is the stimulation of what Ross has labelled a "paranoid climate of privatization" and "a psychosocial closing of the ranks around fortified private spheres" (Ross, 1991:80). Information technology, according to Ross, involves processing, copying, replication, and simulation, and therefore the concept of private information property runs directly counter to the ethic of computing. Ross concludes that the issue at stake in the debate over computer hacking "is the rationality of a shareware culture" (Ross, 1991:80). What is presented in the media as an Electronic Frontier of creative and democratic possibilities is, in actual fact, the site of a discursive battle between the state, corporate interests and various unaffiliated users over the boundaries and acceptable practices in cyberspace.

In 1990, the U.S. government initiated a series of arrests, criminal charges and the confiscation of large amounts of data and equipment in a "crackdown" on the computer underground. Computer hackers were labelled a deviant social class in what Ross called an attempt to rationalize "a general law-and-order clampdown on free and open information exchange" (Ross, 1991:87; see also Sterling 1992). Arguing that "underground groups have been formed for the purpose of exchanging information relevant to their criminal activities," assistant director of the U.S. Secret Service Garry M. Jenkins publicly acknowledged the cooperation of the Secret Service, federal and local law enforcement agencies in the hacker crackdown through such

massive raids as Operation Sundevil (in Sterling, 1992:44). Only seven arrests resulted, although the government kept and searched the computers and software of more who were not charged (Human Rights Watch, 1992). In July 1990, in the aftermath of the crackdown, the Electronic Freedom Foundation (EFF) was formed by John Perry Barlow and Mitch Kapor. The EFF began when Barlow and Kapor were each visited by FBI agents. In fact, Barlow's interest in the situation arose from his perception that the law didn't know what it was up against. Therefore, he decided that an educated law enforcement machine would cause less harm than an ignorant legal system. The goal of the EFF is stated in its press release:

While well-established legal principles and cultural norms give structure and coherence to uses of conventional media like newspapers, books, and telephones, the new digital media do not so easily fit into existing frameworks. Conflicts come about as the law struggles to define its application in a context where fundamental notions of speech, property, and place take profoundly new forms (Barlow, 1991:322)

The EFF was, from its inception, a lobby group formed, funded and supported by the high - tech industries, particularly the very entrepreneurs who benefitted from the microelectronics boom of the late 1970s and early 1980s. Clearly stated, Kapor's intent was to form a political organization to "raise and disburse funds for education, lobbying, and litigation" (in Sterling, 1992:249). The roster of EFF members reads like a catalogue of computer industry mavericks. In addition to Kapor membership includes: Apple founder Steve Wozniak who joined with an offer to match any funds Kapor contributed to the organization; John Gilmore, one of the pioneers of Sun

Microsystems, provided financial support and became a prominent contributor to EFF attempts to draft communication legislation; and Stewart Brand who, through his organization the Point Foundation, declared that the Well was to be the official "home of the Electronic Frontier Foundation" (Sterling, 1992:249).

Members of the computer communications community expressed outrage at perceived violations of their constitutional rights, launching a concerted effort to defend those rights. The EFF became involved in legal cases defending victims of the 1990 government raids, and worked for policies that would lead to a National Public Network to provide universal access to Internet computing resources (Barlow, 1991:322). One does well to remember that the public access advocated by the champions of the National Public Network is, in fact, the right for private networks to engage in commercial activity over the digital highways of the NSFnet backbone. The EFF's attempts to organize consensus over the governance of cyberspace have been framed around a discussion of the fundamental values codified in the American constitution.

Underscoring the celebration of the future is an exhortation to a better life which Horace Kallen calls "the doctrine and discipline of pioneering made art" (Carey and Quirk, 1973:177). The pioneering spirit is integral to the development of the narrative of cyberspace as it has grown out of the Internet. The creation of popular myths is an important discursive tool in persuading people to view new phenomena in particular

ways. The Internet has become a communication network in which vast amounts of information are distributed daily between public, business and academic users.

Public activities include: international discussion groups on topics ranging from gardening to international politics; the ability to locate and retrieve files from computer sites all over the world; and the ability to send electronic messages (E Mail) to anyone who has an account on a computer connected to the Internet. The Electronic Frontier Foundation itself uses a site (eff.org) as a library in which discussions, papers and text of legislation relevant to digital communication are archived and stored.

While commercial activity on the Internet is limited, it is not strictly forbidden. Software developers often make demonstration versions of their products available to Internet users. These products usually consist of partially functional versions of the software to give potential clients a taste for the product. Also included in such packages is information about how to purchase the complete software package.

Finally, while research activities have, in the past, been cited as the reason for the Internet's existence, such activities have moved into the background of daily Internet activity. Military projects are restricted to the Milnet and large research endeavours are managed on the American NSFnet. However, many temporary networks appear and disappear as joint projects between researchers and institutions share information

relevant to particular projects at particular times. What was never predicted in the development of the Internet was the extent to which it would become a vast electronic postal, discussion and communication network for users who have become able to communicate with like-minded individuals and communities all over the globe.

While the uses of this international resource are vast, it is the rhetorical value of cyberspace that is invoked in discussions of the Internet more often than the technical advantages of international networks. John Perry Barlow, co-founder of the Electronic Freedom Foundation, mythologizes cyberspace when he populates it "almost exclusively by mountain men, desperadoes, and vigilantes" (in Wooley, 1992:123). Barlow suggests that the only way to create a cyberspace in which the freedoms guaranteed by the American Constitution stay intact in the virtual world, "is to make it inhabitable by ordinary settlers" (in Wooley, 1992:123). The contest to create dominant myths for cyberspace can be understood as a variation of what Nimmo and Combs call politically-mediated realities.

III. Group Fantasies and Mediated Realities.

According to Nimmo and Combs, there are three components to political reality. First, the taken-for-granted reality of everyday life is a kind of delusion. The authors trace this belief to Walter Lippmann, who argued that people carry pictures in their

heads of the way they think things are, and it is upon these pictures that people base their actions. These pictures are the product of two different processes. The first is direct experience. People create mental images to make sense of the world around them and, according to Lippmann, such pictures comprise, to a large extent, what is "real" for each person. However, not everything that people know is the result of direct experience. People also read, see and hear about distant events through accounts in the media or by word of mouth. Ultimately, each person imagines what has taken place and, to make sense of the accounts, incorporates these indirectly experienced things into their pictures of the world (Nimmo and Combs, 1992:2). Crucial to this process is the belief that the pictures constitute what people believe to be real rather than simply reflect experience.

Second, reality is created, or constructed, through communication - not expressed by it. Recalling Dewey, the authors claim that, "whether a real world exists or not, the only way we can know it, grasp it, make sense of it, is through communication...Communication does more than report, describe, explain: it creates" (Nimmo & Combs, 1992:4). All realities (even those emerging out of direct, first hand experience with things) are therefore mediated.

Finally, Nimmo and Combs suggest that for any situation there is no single reality nor one objective truth, but rather, each situation can be variously interpreted, creating multiple, subjectively derived realities (Nimmo & Combs, 1992:3-4). In the

study of political communication the authors argue that what becomes accepted as reality is often the outcome of a contest between competing narratives. To understand the success of a particular narrative's becoming accepted as reality, it is necessary to trace the process by which a narrative takes on the aura of truth.

According to Nimmo and Combs, humans confronted with novel situations or problems experience an 'irritation of doubt' and engage in a natural process of relieving the resulting tensions. They suggest that this irritation of doubt, as described by Charles S. Peirce, is the beginning of fantasy (Nimmo and Combs, 1992:11). Fantastic realities, the authors argue, are the product of human imagination struggling to interpret mediated accounts. "The social construction of fantasy," they write, thus "involves an interplay of groups and mass communication..." (Nimmo and Combs, 1992:11). The mass media can transform the symbolic processes of computer-mediated communication into political fantasies through the process of setting cyberspace into stories framed by dramatic conventions. The authors claim that "people learn politics from mediated pasts and futures that are presented anew in the present" (Nimmo and Combs, 1992:4). This process of creating dramatic narratives is one way in which people humanize new forms of symbolic interaction, new ways of working, and new ways of coping with technological development. In fact, the creation of popularly accepted images of cyberspace is one way of making them "real."

Once a person interprets mediated accounts, thereby scratching the irritation of doubt, the particular interpretation must somehow be tested against reality. Often, a person is anxious about whether his or her interpretation of events, or assumptions about other people are erroneous. To relieve this fear, individuals are compelled to share their private fantasies, to form group fantasies (Nimmo and Combs, 1992:11-12). "To have one's private views shared by others," write Nimmo and Combs, "constitutes a social validation of a person's image of things" (Nimmo and Combs, 1992:11). The authors argue that because it is shared, a group fantasy takes on an aura of truth that the private fantasies of individuals do not.

Ernest Bormann's studies of group fantasizing conclude that dramatizing communication creates social reality for groups of people, promoting fantasy building, sharing, and 'chaining,' that is, the spread of the fantasy to all group members (Bormann, 1972). This shared rhetorical vision gives the group a sense of cohesion and purpose. In the cyberspace narratives, the attempt to challenge the popular view of hackers as criminals is an attempt to foster such a common rhetorical vision among members of the Internet community. Following Bormann, the final step in group fantasizing is for the group to go public, "communicating the rhetorical vision to larger audiences...The fantasy spreads to even larger audiences and, if potent enough, constitutes the single symbolic reality created for an entire population" (Nimmo and Combs, 1992:13). Rhetorical communities are groups of people who share a rhetorical vision and who are actively involved in rhetorically inspired drama. It is in

this context that the Electronic Frontier Foundation is significant in the rhetorical contest over cyberspace.

Those fantasies that chain out so widely they become part of a national culture can become cultural myths. In fact, this is one of the goals of group fantasy-building. Nimmo and Combs define a myth as "a credible, dramatic, and socially constructed picture that people accept as permanent, fixed, unchanging reality" (Nimmo and Combs, 1992:14; 66). Group fantasies support enduring myths and fantasies conforming to a nation's mythology endure and continue chaining out because of that mythology (Nimmo and Combs, 1992:14). Thus, the successful fantasy is one that makes a new situation seem perfectly understandable in light of the dominant, already-in-place mythology of a particular culture. The EFF spreads the fantasy of the new digital frontier in an active engagement in the process of myth-making.

IV. The Electronic Frontier

The fantasy theme, in its dramatic form, portrays heroes and villains, not necessarily as literal characters, but as symbols of a more general message that a speaker wishes to convey. The fantasy themes of the cyberspace narratives are framed around the dramatic portrayal of a symbolic confrontation between good and evil. In his discussion of the western film, Peter Homans suggests that the destruction of the

villain is brought about by his own actions, the hero can perform the contradictory actions of destroying a threat while appearing to save and to restore order (Homans, 1981:239). The wild frontier of digital space is portrayed as an untamed wilderness sparsely populated by solitary, dangerous mountain men. Following the myth of the western film, corporations, like the robber barons of the American West, threaten to dominate the frontier before it can be settled by ordinary citizens. The protection of order and the civilization of the Electronic Frontier can only come about through the efforts of a few honest, dedicated men.

Appearing in the broader fantasy theme are a number of fantasy types. These can be defined as a category of recurring fantasy themes appearing in a series of related messages. In the narratives of cyberspace, such types include: the binary opposition of order and chaos, the individual's right to challenge authority, and the theme of the electronic frontier.

Arnold Pacey argues that frontier values are still an important part of thinking about technology, "especially in space and in the few remaining unsettled, unexploited regions of the earth" (Pacey, 1983:87). He suggests that the West still dreams of the technological conquest of the northern frontier. However, the desire to settle an unknown frontier is not new. Nimmo and Combs relate how, in the late 19th century, people in the already settled regions of eastern America, became fascinated with the western frontier. The West, for nineteenth century Americans, had already become a

fantastic reference and had become an important part of the American mythic past that still mediates realities of the present (Nimmo and Combs, 1992:73).

Today, for some people, cyberspace represents a vast, unexplored territory, or, in the words of the founders of the EFF, a frontier region "in which the sovereignty is not yet well defined" (Kapor and Barlow, 1990). Barlow and Kapor claim that events such as the hacker crackdown obscure the true contest in cyberspace - a struggle between institutional control and individual liberty. While it may seem like an exotic, esoteric territory, Barlow domesticates cyberspace by suggesting that cyberspace is "familiar to most people as the 'place' in which a long-distance telephone conversation takes place" (Barlow, 1992). He hints also at the vastness of cyberspace as "the repository for all digital or electronically transferred information" (Barlow, 1992). For Barlow cyberspace is important for all citizens in the Information Age because it is increasingly "the venue for most of what is now commerce, industry, and broad-scale human interaction" (Kapor and Barlow, 1990). This electronic wilderness is, according to the EFF founders, "the homeland of the Information Age, the place where the future is destined to dwell" (Kapor and Barlow, 1990). Here, it is not people but the future itself which will dwell, like some pagan god, in the 'new place' of digital communication.

To summarize, the Internet has become the object of a struggle between competing rhetorical visions. Various groups attempt to chain their narratives out into popular

consciousness thereby infusing their interpretations of cyberspace with the aura of truth. The combatants in this rhetorical struggle are the state and the EFF and the political issue which galvanized each group to take a stand on the necessity to define cyberspace was the hacker crackdown of 1990.

The state position, supported by the popular press, portrays hackers as villains polluting cyberspace with computer viruses, committing acts of theft and electronic hooliganism. In the government narrative of cyberspace, hackers are the serpents in this digital Eden.

Opposed to this position stands the Electronic Frontier Foundation. For the EFF, it is the state itself who must be guarded against. Law enforcement agencies and security professionals are potential villains who want to use cyberspace as a means for social control. This totalitarian vision appears in dystopian science-fiction and in films such as *Brazil* in which the machinery of communication quite literally becomes the machinery of state oppression and torture.

Having named the players and the field of combat the discussion now turns to the rhetorical debate over hackers as it illustrates the contest between the EFF and the state.

V. Hackers: Heroes or Hoodlums?

Journalism, according to Kenneth Burke, is the creative process that sizes up situations, names their elements, structure, and outstanding ingredients, and "names them in a way that contains an attitude toward them" (in Nimmo and Combs, 1992:56). What, it may be asked, is the attitude created in journalistic accounts of the players in the game to construct myths of Cyberspace? There is a tendency to cast the players in the various cyberspace debates in binary opposition to each other - between law and crime, order and chaos. The EFF attempts to recast hackers as cowboys rather than as criminals. However, the rhetoric of the EFF maintains the dramatic conventions of conflict in their version of the cyberspace narrative. While on the one hand writers such as Barlow are concerned with changing the public perception of hackers and other denizens of cyberspace, the Western narrative requires villains. Barlow attempts a delicate balance when he states that cyberspace "has been populated for some time...On one side are 'hackers' [whom Barlow defines euphemistically as]...people who gain unauthorized access to computers...[on the other hand] settlers - the business interests who have staked claim to the terrain - and the law that tends to protect these established interests" (Barlow, 1992). According to the EFF, the rights of the individual must be championed to shift the balance away from the business interests who currently enjoy the benefits of legal protection.

The state position, that hackers are a threat to society, has been picked up, for the most part, uncritically in press accounts of computer crime. This definition of hackers has become the dominant reading of the computer subculture. Following the hype over the Internet Worm in 1988 and the subsequent actions of the American Secret Service, the popular press has taken a negative attitude towards the computer underground, bulletin boards and, in particular, computer hackers. In rhetoric aimed more at security professionals, corporations and parents, hackers have been consistently portrayed as dangerous "data thieves" who are the newest incarnation of anarchistic crime. An almost hysterical dread of computer intrusion appears in the work of writer Tom Forester, who does not share Barlow's concern with giving hackers the benefit of any doubt. He defines hacking as a synonym for computer burglary, involving "breaking-in to other people's systems for fun or with intent to blackmail or commit sabotage" (Forester and Morrison, 1990:259).

Forester cites a recent book on the computerization of crime and terrorism, in which it is alleged that "the very future of Western society is now threatened by computerized crime and high-tech terrorism" (Forester and Morrison, 1990:258). Forester regards hacking as a form of "deviant behaviour," quoting New York chief assistant district attorney Laurence A. Urganston's complaint that "Every new technology carries with it an opportunity to invent a new crime" (in Forester and Morrison, 1990:258).

Krol, similarly, demonizes hackers in his book *The Whole Internet*, while he praises the "overriding premises" of network computing. First, the notion of individuality is valorized and censorship of any kind is abhorred. Overriding this notion is a second premise, the belief that "the network is good and must be protected." Identifying these premises with what he calls "the frontier ethics of the West," Krol dismisses any attempt to excuse the action of hackers such as Robert Morris on the grounds that hackers are young, enthusiastic programmers with a keen desire to learn. He describes the Worm in purely negative terms, as "a program which used the Internet to attack certain types of computers on the network. It would gain unauthorized access and then use those computers to try to break into others" (Krol, 1992:37 footnote). For Krol, the continued existence of the Internet takes precedence over the rights of any individual user. He thus reinforces the notion that anyone who cannot play by the rules, even if, as in the case of the Internet, there are no clearly laid out rules, is outside the law.

However, there is an oppositional stance to the paranoic, security view of hackers as invisible bandits. It appears, predictably, in the literature of the computer underground, but also in the works of cyberpunk science fiction authors such as William Gibson and Bruce Sterling. Sterling goes further than any other writer to romanticize the role of the hacker in the budding information age:

Suddenly a new alliance is becoming evident: an integration of technology and the Eighties counterculture. An unholy alliance of the technical world and the world of organized dissent - the underground world of pop culture, visionary fluidity, and street level anarchy (Sterling, 1986:xii-xiii).

Sterling plays on anti-establishment myths of the counter culture that reflect more of his own generational nostalgia than any accurate portrait of an oppositional electronic sub-culture. As a fantasy type, the representation of the hacker as a kind of outlaw has roots in the representation of gangsters in 1930s Hollywood film. The hacker, like the thirties' bandit, is an outsider who must be brought, often with disastrous consequences, under the rule of law.

Gangsters were outlaws because they were forced into a life of crime. Here was a world in which people seeking to make a decent living faced threats from self-seeking entrepreneurs. The gangster's ritual destruction on screen gave audiences a fantasy of social justice meted to persons who violate the norms of democracy and common sense. During the hacker crackdown of 1990 hackers were sent a clear message about the function of social justice. The assistant director of the U.S. Secret Service proclaimed, after the Sundevil raids, that computer hackers were mistaken in the belief "that they can successfully avoid detection by hiding behind the relative anonymity of their computer terminals" (in Sterling, 1992:44). While Morris was given a light sentence as a first time offender, a precedent was set by the case. The EFF reports that the U.S. government had decided that to get a conviction for computer abuse, it was necessary only to prove unauthorized access, not intent to

harm (Human Rights Watch, 1992). Whether the hacker is portrayed as a gangster or as simply a bright, inquisitive trespasser, he is not beyond the rule of law.

However, the law doesn't escape criticism in the cyberspace narrative. When agents in Operation Sundevil confiscated the property of small businesses and computer professionals, "innocent" bystanders to the vandalism of the computer underground, a rhetorical effort to vindicate the rights of "legitimate" operators to stake out territory in cyberspace began in earnest.

While one of the stated goals of the EFF has been to provide aid in cases of government abuses of power in computer-related court cases, the organization has gone to lengths to distance itself from the hacking underground, including a contribution of almost \$300,000 to Computer Professionals for Social Responsibility (CPSR) (2600 Magazine, 1990:10). The cause celebre of the EFF was not so much the Neidorf case in which a young computer hacker was charged with the theft and distribution of a confidential document owned by AT&T, but the unfair treatment of Steve Jackson Games of Austin, Texas.

Steve Jackson Games, a small business in Austin that produces role playing games, was raided by the U.S. Secret Service and the Austin police during the summer of 1990. Federal agents told Jackson they thought his new game, 'GURPS Cyberpunk, High Tech Low Life' was a manual for computer crime. Agents searched his offices,

destroyed property and confiscated the equipment necessary to complete production of the game (Meyer, 1992:40). No charges were laid, but two years later, Jackson has still not regained his equipment or data.

Mitchell Kapor, former president of the EFF, has criticized such cavalier behaviour on the part of the Federal government. He claims that the overuse of force and confiscation of private property has created a "chilling effect on a valuable social experiment" underway on America's computer networks. Ultimately, Kapor believes that a new culture is growing on the computer networks, a new culture that may easily be smothered by excessive abuse by the risk of "being tyrannized by a majority" (in Meyer, 1992:41). For Kapor, this new culture is best represented by small independent businessmen such as Steve Jackson. Kapor defends the rights of hackers as the same rights of all citizens in cyberspace not because he condones their actions, but, rather, because he is even more apprehensive of an obtrusive government presence in the new communication environment.

Having identified its cast in the cyberspace drama, the EFF attempts to negotiate relations between hackers, corporations and the state by claiming the right to defend the interests of the public. Finally, the EFF attempts to engineer a beneficent role for the state because it assumes that a balance is needed to offset the influence of large corporations and their values in policymaking. The EFF argues that the federal government has created a regulatory environment in which large corporations are

favoured in cyberspace. The rhetoric of the EFF echoes the sixties counterculture's wariness of the Establishment. Therefore, they call for education for policymakers, for corporations and for the general public so that all Americans can benefit from active participation in the new digital frontier. The dramatic task of the EFF lies "in bringing civilization to Cyberspace" (Kapor and Barlow, 1990). The precarious threat exists that "Constitutional protections, indeed the perceived legitimacy of responsible government itself, might gradually disappear" (Kapor and Barlow, 1990). To remedy this, the EFF proclaims its role as educator hoping that by encouraging communication between public and policymakers and corporate officials they wish to "define the appropriate metaphors and legal concepts for life in Cyberspace" (Kapor and Barlow, 1990).

How can fantastic references, such as the Western frontier, be hooked into the Cyberspace metaphors of west, frontier, settlement and outlaws? The uses of myths include a rhetorical attempt to naturalize the grand narrative of historical progress. Howard Rheingold writes, "Whether we like it or not, the communitarians and the venters, the builders and the vandals, the egalitarians and the passive-aggressives, are all in this place together. The diversity of the communicating population is one of the defining characteristics of the new medium" (Rheingold, 1992). In such rhetoric, it is taken for granted that the myth of progress and scientific development are true. The political potential of myth-making appears through the act of chaining a fantasy. A group can create the popular assumption that their version of a situation is true. Here,

for whatever motives, is the political project of an organization such as the Electronic Frontier Foundation.

VI. Faith in Technological Systems

Carey cites fairs and exhibitions as examples of public occasions during which future rhetoric is used to paint a picture of the bold, bright future that is just over the horizon. As well as inaugural events, Carey states that the launching of new projects occasions future rhetoric. He suggests that the rhetorical aversion of the present works because of the general belief that the United States is somehow separate from history. George Grant also characterized the new world as the embodiment of a progressive world view:

On this continent the modern mass age has arrived as to no other people in the world. North America is the only society that has no history of its own before the age of progress, and we have built here the society which incarnates more than any other the values and principles of the age of progress (Grant, 1962:14-15).

America, then, is the land that is exempt from history. Not only was the country the promised land of the Utopian philosophers, but the future-directedness of American culture which originated in a religious, messianic role was replaced, in the nineteenth century, by the ideology of progress.

The spiritual quest of the American dream became identified with manifest destiny, "the course of the American empire. America's dispensation from history gave it a missionary role in the world; to win the world to an absolute truth - at first religious, then technical; to create a radical future" (Carey and Quirk, 1973:178). First preachers, then politicians appealed to Americans to retain their faith in the future as a solvent and "asked the public to believe that the latest technology or social project would fully justify past sacrifices and the endurance of present toil" (Carey and Quirk, 1973:178).

This sense of mission appears throughout American political rhetoric. During the Depression, Roosevelt called Americans "a people of the future" who, never satisfied with the status quo, continually set their sights on the future, driven by the notion of progress for its own sake, invoking "the hope, the conviction, that there was a better life, a better world, beyond the horizon" (Carey and Quirk, 1973:179). Such public exhortations continue to be invoked in the American political arena. In 1991, then Senator Al Gore presented a Bill to Congress calling for the establishment of a new high-speed computing network to be funded and directed by the federal government. His description of the network sounds remarkably like Roosevelt's technological projects such as the Tennessee Valley Authority project of the 1930s. Gore writes, "just as the interstate highway system made sense for a post-war America with lots of new automobiles clogging crooked two-lane roads, a nationwide network of superhighways-high-speed, fiberoptic networks-is now needed to move the vast

quantities of data that are creating (an) information gridlock" (Gore, 1991:189). The underlying assumption is that a technological solution is possible to the perceived problem of moving the vast quantities of information that characterize "traffic" in an information society.

While faith in technological projects has been promoted throughout American history over the last century, one does well to remember that Grant characterized all of North America as the society of progress incarnate. Evidence of promises of a bright future brought about by technological development appear in Canada as well.

One week after the failure of the 1992 constitutional referendum, the Prime Minister of Canada announced a new economic recovery plan. A key component of the recovery strategy was a commitment to expand the telecommunications infrastructure to create, in Canada, the most sophisticated system of electronic highways in the world. Mulroney's public announcement stated the ultimate goal as "a world-wide, open trading system" to be achieved through strategic investment in a "world-class transportation and communication system" (Fraser and Fagan, 1992:A1). Such projects are not limited to either the federal government or the Conservative party in Canada. In Ontario, the New Democrats recently announced an infrastructure program designed to make Ontario and Canada, "enabled by telecommunications...the best place in the world to live, work, learn, and do business" (Ontario Government 1993).

Historically, such technological fixes haven't worked. Carey cites the failure of Roosevelt's Tennessee Valley Authority in the 1930's; Gore's bill for a National Research and Education Network was not passed by Congress. However, even the EFF doesn't challenge the system. Instead, it presents itself as the unofficial guardian of the public interest as its members jockey for a space for themselves in the administration of the latest technological frontier. The EFF exhortation to keep faith is manifested in a political style campaign - an attempt to express an elite fantasy view of cyberspace.

VII. Elite Fantasies and the EFF.

Mediated realities are, according to Nimmo and Combs, ultimately self-fulfilling. "Accounts of the way things are conform to the pictures people have of those things, the way they imagine them, and thus the accounts reinforce instead of challenging the pictures in our heads" (Nimmo & Combs, 1992:2). In an effort to release tension, groups often act out dramatic performances that build up group cohesion. "Dramatic (ie social) performance supplants task performance as the first priority of the group" (Nimmo and Combs, 1992:154).

The political question that arises over the fate of virtual communities on the Internet is how the politics of cyberspace are to be constructed. "The future of virtual

communities," writes Rheingold, "is connected to the future of everything else, starting with the most precious thing people have to gain or lose -- political freedom" (Rheingold, 1992). Rheingold questions whether electronic democracy will be a form of political empowerment or whether it will "become a brilliant piece of disinformation, another means of manipulating emotions and manufacturing public opinion in the service of power" (Rheingold, 1992).

The EFF, it is argued, was organized "to help civilize the electronic frontier...in keeping with our society's highest traditions of the free and open flow of information and communication" (Godwin, n.d.). These fundamental values have been defined as freedom, privacy and equality. The U.S. Supreme Court's blindness to technological change has become evident in its attitude towards the ways in which information can now be generated, stored and transmitted. As a remedy to this unfair treatment of electronically-mediated communication, Tribe proposes that the constitution be amended to protect "freedoms of speech, press, petition, and assembly" regardless of the "technological method or medium through which information content is generated, stored, altered, transmitted, or controlled" (Tribe, 1991).

Those who would lobby for a free-flow of information traffic along the electronic superhighways generally argue along the lines of Rose, who writes:

Resulting from the confusion of regulation at the national and state level, the U.S. government should enact or re enact all laws regarding electronic services on a national level only, overriding individual state control over

system operators, activities in cyberspace. It's time to realize that provincial state laws only hinder proper development of interstate electronic systems (Rose, 1991).

Rose suggests that all laws must be carefully designed to interact with other laws that affect electronic communications, the goal being "to create a well-defined, reasonable legal environment for system operators and users" (Rose, 1991). The reasonable legal environment promoted by Rose will ease the activities of individual users but will also ease the activities of the corporations who have an interest in using interstate and international electronic systems.

When the Electronic Frontier Foundation was founded in July, 1990, its aim was to "ensure freedom of expression in digital media, with a particular emphasis on applying the principles embodied in the Constitution and the Bill of Rights to computer-based communication" (Davis, 1993). By the end of 1992 the organization felt it had met many of those challenges. It could claim to have:

defended civil liberties in court. We have shaped the policy debate on emerging communications infrastructure and regulation. We have increased awareness both on the Net and among those law enforcement officials, policy makers, and corporations whose insufficient understanding of the digital environment threatened the freedom of Cyberspace (Davis, 1993).

In fact there is evidence to support such claims. In a news item about cellular phone fraud on the NBC Nightly News, February 11, 1993, the crisis was portrayed as "a high-tech cat and mouse game" with criminals cast as "bandits" and "bad guys". The interesting aspect of the report was the presentation of phone fraud perpetrators as

invisible - unknown bandits. These are the kind of descriptions that, only four years earlier, had been used to describe hackers. In the NBC report, no connection was made between cellular fraud and the computer community, even though hacking was once lumped in with a kind of phone fraud called 'phreaking.'

The EFF found, after two years in existence, "that Cyberspace is huge. It extends not only beyond constitutional jurisdiction but to the very limits of imagination. To explore and understand all the new social and legal phenomena that computerized media make possible is a task which grows faster than it can be done" (Davis, 1993). However, there has been no attempt to set the debates outside the existing structures of power in the United States. Instead, the EFF, sharing the values of the state and of the very businesses it claims to watch in the public interest, acts out a pseudo-political campaign, undergoes an internal power shift and leadership change.

Propaganda in political campaigns aims at mediating two closely related, overlapping fantasies. First, propaganda constructs fantasies about the candidate, his or her qualities, qualifications, program, and destiny. Second, propaganda mediates realities about the nature of the world, the array of forces, dangers, threats, and enemies that must be confronted and vanquished. "The linkage of the two fantasies is essential; the destiny of the candidate becomes the destiny of the political world" (Nimmo and Combs, 1992:66). In late 1992 The EFF closed its offices in Boston and centred activity in Washington D.C. The 'visionary' Mitch Kapor was replaced as

president by John Perry Barlow, former lyricist for the Grateful Dead. Barlow, an eloquent writer and public speaker, seemed an obvious choice for the ascending organization as it positioned itself as a permanent political lobby.

Sterling creates an image of Barlow as the cyberspace version of a Texas Ranger. He describes a photograph in the New York Times Magazine in which Barlow, rugged and bearded, posed in the wilds of his Wyoming ranch, a rifle cradled in the crook of one arm and a Macintosh computer perched on the fencepost behind him. Nimmo and Combs provide a clue for interpreting this image when they suggest that "(c)onsumers often project onto objects qualities that as buyers they want to find in them even when the objects themselves lack those qualities. This is the process of projected identification" (Nimmo and Combs, 1992:67).

In the creation of elite group fantasies, leadership often plays an important role. The process of group think, in which members of a particular group are compelled by their membership to identify and agree with group goals, can be reinforced by adroit leadership. Members tacitly accept manipulation from a popular leader, especially one highly respected and suave in manner (Nimmo and Combs, 1992:154). However, leadership is not the only criterion for the development of an elite fantasy.

It is out of taken-for-granted assumptions that elite fantasies grow and it is by sharing those presumptions with wider audiences that fantasies spread to the mass.

Nimmo and Combs emphasize the necessity for members of an elite group to share a particular fantasy. However, it is also important that they share social events to reinforce a feeling of belonging. In the rise of the EFF, members of law enforcement agencies, hackers and civil libertarians are part of a relatively small group of computing professionals. Sterling chronicles the ways in which differences were played down at the Cyberthon conference in 1990. While Cyberspace is presented as the site of a political contest between hackers, the law, and the civil libertarians, each group is a component of an elite group who meet in person, share their presumptions and attempt to chain their common views to a larger audience of policymakers and citizens.

The EFF acknowledges the disenfranchisement possible between the information-rich and the information-poor. This disenfranchisement is detrimental to the info poor, "denying them any possibility of citizenship in Cyberspace and, thus, participation in the future" (Kapor and Barlow, 1990). However, as in campaign hype, the overarching fantasy formed through the rhetorical efforts of the Electronic Frontier Foundation is one of hope. The territory of cyberspace exists in a realm of information which is represented as democratic, and in which "one valuable currency is knowledge elegantly presented. Wit and use of language are rewarded in this new medium, which is biased toward those who learn how to manipulate attention and emotion with the written word" (Rheingold, 1992). The EFF has established itself as

a guardian of the public interest without questioning its right to that role and without questioning who comprises the public whose rights it professes to protect.

In the announcement of political reshuffling at the organization, Davis states the faith that the EFF has in the computing community. "We...have a great deal of faith," he writes, "in the ability of the online world to keep us honest...we founded the EFF because we didn't feel that large, formal organizations could be trusted with the future of Cyberspace. We have no intention of becoming one ourselves" (Davis, 1993).

Cyberspace is a language game in which the rhetorical visions of competing social groups are invoked to create myths and legitimate fantasies that chain out as generally accepted mediated realities. The EFF expresses a number of ideological assumptions including the liberal faith in a mythical Hand of Providence that guides the market of a free society. The Foundation claims to speak for the general population. Even when they acknowledge that some people are excluded from participation in the new digital world, the rhetoric pretends a level playing field, minimizing or eliminating questions of gender, race, social class and other categories of difference. Cyberspace as a frontier fantasy is framed around the battle between good and evil in a mythical narrative that is sufficiently removed from everyday life to be seen as a reality but not as a direct threat to the concerns of average citizens. Therefore, the various rhetorical visions can still exhort people to leave it to the authorities. A danger is that the EFF will only replace the technocrats as magicians of technology. Barlow is cast as the

"emissary between the magicians of technology and the wary public who must incorporate this magic into their daily lives" (Kapor and Barlow, 1990). To better understand the appeal of the rhetorical vision of cyberspace, it is necessary to turn to a discussion of ideology to understand how the narrative of cyberspace can be viewed as a manifestation of a utopian impulse. This discussion follows in Chapter Three.

CHAPTER THREE

IDEOLOGY AND UTOPIA

1. Defining the Space of Tomorrow.

Cyberspace has been defined as a "global arena of social, commercial and political relations" arising from the emerging digital world of electronic messaging systems, information services, computer simulation and telecommunications (Benedikt 1991; Rose 1991; Sterling 1992). In Gibson's fictional cyberspace the specific logic that structures the Matrix is the logic of a transnational information economy in which:

Walls of data, rather than (sic) walls of brick and glass, divide a hardwired, or postorganic, humanity into economic protagonists - those included and those excluded from, say, the dominant military/industrial complex. Those, in other words that do and those that do not have direct access to information, hardware technology and software expertise (Tomas, 1991:44).

Gibson's cyberspace illustrates how information systems can support a particular vision of how society should be (see Braman, 1989). Carey argues that the presentation of the future in various texts from Patrick Geddes to Toffler has been structured around the technological fulfilment of a particular social vision: the creation of a universal, modern world based on the principles of rationalism and scientific achievement. Cyberspace, from this perspective, can be investigated as a

kind of thought experiment; it can be seen as the playing out of different structural possibilities for a future information-based society.

This chapter begins with a discussion of the interrelationship between ideological and utopian visions of the future. Emphasizing Ricoeur's suggestion that dystopian works and utopian works are different aspects of the same creative impulse, three kinds of narrative space appear in literary prophesies of the technological future. First, utopian spaces are presented, in which particular policies and technologies have yielded a way out of current dilemmas. These are part of the imaginative inheritance of modernity (Carey and Quirk, 1973:174). The attempt to reinvigorate a utopian optimism into the discussion of cyberspace is fundamental to recent work of writers such as Michael Benedikt and David Tomas. Second, dystopic spaces are those narrative spaces in which either a utopian vision collapses or in which the policies of a current regime are extrapolated unchanged into the future. The dystopian vision of a near future dominated by multinational corporations and a social Darwinist economy are characteristic of Gibson's *Sprawl* novels. Finally, the works of Benedikt, Tomas, and computer scientist David Gelertner attempt more than simply the renewal of a vision of an harmonious techno-future. These self-proclaimed architects of cyberspace propose to build what Foucault called a heterotopia - the creation of a realizable, utopian space, separate from the everyday sphere of social interaction. Cyberspace, as a manifestation of the utopian impulse, is the latest attempt to draw the blueprints for

"a new age of peace, democracy and ecological harmony" (Carey and Quirk, 1973:174).

II. Ideology

In a *Ideology: An Introduction*, critic Terry Eagleton illustrates the imposing influence of Marx on contemporary understanding of the concept of ideology. For Marx, ideology is explained by analogy to the camera obscura. Like the camera lens, through which an object in the real world is inverted as it passes through the focal plane to be captured on a photographic plate, ideology creates an inverted reflection of social reality (Eagleton 1992). Ideology is the error that makes people take the image for the real. Promoting this inversion, a dominant social class justifies its authority by naturalizing its interpretations of social reality. Sharing with interpretive studies an emphasis on the production of meaning during moments of reception, critical studies view cultural texts as articulations of such dominant ideological meanings and values (Caraggee, 1990:92). Critical research on audiences focuses attention on such moments of reception as they are connected to questions of political and cultural power. Unfortunately, the critical view of ideology loses some of its explanatory power in an era where social classes and power interests can no longer be easily broken into readily identifiable groups. Even if one accepts Gramsci's view of hegemony, which incorporates an element of struggle into the contest for

dominant meaning, in this post-modern, post-Fordist era, there are too many groups competing for momentary ascension. Therefore a more humble expectation for a theory of ideology is needed. Philosopher Paul Ricoeur argues that:

Ideology is an unsurpassable phenomenon of social existence, insofar as social reality always has a symbolic constitution and incorporates an interpretation, in images and representations, of the social bond itself (Ricoeur, 1991:255).

Ricoeur challenges the notion that ideology is the self-evident expression of class conflict. "That today this assumption seems natural to us is an indication of the deep influence of Marxism on the problem of ideology" (Ricoeur, 1991:247). If it is taken for granted that ideology is a function of class domination then it is assumed uncritically that ideology is "an essentially negative phenomenon, the cousin of error and falsehood, the brother of illusion" (Ricoeur, 1991:247). Ideology, from the Marxist perspective, is simply a false representation of the world that functions to conceal a set of power relations. Power relations are concealed so that the ideological view of the world is accepted as the natural order of things and the power of a dominant group remains uncontested. Ricoeur suggests that because this definition is considered entirely natural, the possibility that ideology can be anything but a negative phenomenon is absent from contemporary literature on the subject. Ricoeur prefers to discuss ideology not as a theory of deception but rather as both a necessary component of social life and as "a theory of social motivation" (Ricoeur, 1991:250).

Beginning with the Weberian concepts of social action and social relation, Ricoeur constructs a theory of ideology that supports the earlier discussion of the social construction of reality through communication. Social action consists of shared, meaningful experiences and a common orientation between people. The notion of social relation adds to this phenomenon of meaningful action and mutual orientation the idea of stability and the predictability of a system of meaning over time (Ricoeur, 1991:249). The ideological phenomenon thus arises out of the necessity for a social group to give itself an image of itself, "to represent and to realize itself in the theatrical sense of the world" (Ricoeur, 1991:249).

Ricoeur follows Jacques Ellul's argument that "Ideology is a function of the distance that separates the social memory from an inaugural event that must nevertheless be repeated" (Ricoeur, 1991:249). For Ellul, founding acts can be derived and are reactualized only through interpretations modelled after the original event. Thus, ideology can be understood as the system of belief arising out of a social interpretation or rhetorical vision that gives a group a sense of cohesion and purpose. Ideology replays a founding act as a symbolic justification for the system of authority and it is through this process of legitimation, whether seen as a deception or not, through which an historical community becomes a political reality since the founding act of a group, whether the colonization of America or the founding of the EFF, when represented ideologically, "is political in its essence" (Ricoeur, 1991:253). The ideological narrative both identifies a social group to itself and provides it with a

purpose in the world. The ideological narrative that is fulfilled by the promise of technology in Carey's analysis of future rhetoric as well as in the present discussion of cyberspace is the realization of a utopian state through the application of technological means.

III. Utopia and Dystopia.

To understand the difference between utopian and dystopian images, it is helpful to look at two archetypal characters in the quest for knowledge, one historical and one fictional: Francis Bacon and Dr. Faustus. Bacon, generally considered the creator of the scientific method, can be seen as representative of the origin of the modern utopian impulse. Knowledge, for Bacon, equals power. Knowledge of the laws of nature provides the scientist with the tools to exercise power; power equals the means by which the world can be changed; to change a world is to exceed the bounds in which we have found ourselves. Utopia, in the Baconian view, is a world which is new and changed and *good*. "Knowledge-power is the means by which we deliberately leave the Garden" (Ihde, 1986:97). Ihde suggests that the counterpart to Bacon may well be Christopher Marlowe's Dr. Faustus. Faustus starts out as a Baconian scientist and philosopher but, having exhausted traditional sources of knowledge, makes a pact with the Devil in which he agrees to trade his soul for a number of years of unlimited knowledge and power. The very utopian hope for

knowledge turns out to be an overwhelming temptation for Faustus, leading in the end, to his downfall. According to Ihde:

There is, in Faustus, the identification of knowledge-power with the hubris of wanting to become a god, and implicitly, there is in Faustus the subterranean nostalgia for remaining intuitively placed within Nature, not exceeding its bounds. To do so threatens the gods and threatens the very position of humans. Faustus is the inversion, the dystopian underside of baconian utopianism (Ihde, 1986:98).

Historian Langdon Winner argues that "all conceptions of utopia rest on an implicitly technological model" (Winner, 1977:26). Winner's statement is understandable if one describes technology in terms of Jacques Ellul's definition of technique as "the one best way of doing things" (Ellul, 1964). Technology comes to be seen as the means by which a utopian state can be achieved. The utopian dream, traced back to both Bacon and Hobbes, posits the idea that "if one could fashion the conditions of reality to suit a preconceived design, both certainty and control would be assumed" (Winner, 1977:26). For Hobbes, political order deliberately fashioned would be "more perfect since it was built from the ground up on rational principles" (Winner, 1977:26). Not only can technology produce the ideal state, but it also represents an end to the illusions propagated by ideology. Daniel Bell states that technology offers a break with ideology and the dawn of a new society "in which individuals can create their own modes of communication and their own communities" (Bell, 1979:40).

To understand the relationship between ideology and utopia it is helpful to turn briefly to the work of historian Karl Mannheim. Mannheim postulated ideology as

the system of beliefs with which a social group justifies and rationalizes the present condition. Ideological images are reflections of the social reality and group fantasies of the present. For Mannheim, utopian images represent a fresh stream of ideas that challenge the present and seek to transcend it. Utopian images represent a radical break with the present in their depiction of the possibilities of the future.

Ideology, then, controls our understanding of the present, but it also affects our conceptualization of the future as well, insofar as it sees the future as a mere continuation of the present. Such a vision of the future determined by patterns of interaction and social relations set in the present are dystopic, to the extent that dystopia represents an extrapolation of the present ideological sphere into the future. Dystopian literature can also represent the collapse and ultimate failure of a particular utopian scheme. Although dystopia conveys the withering away of utopia, its gradual abandonment or reversal, Klaic argues that, in the last analysis, even dystopian drama is in fact utopian since "it involves utopian ambitions while describing their total collapse" (Klaic, 1991:3). Both utopians and dystopians share some often unstated premises: that the use of technologies is in some degree deterministic; that technologies, once inverted and employed, exceed the abilities of humans to control them.

Ultimately, ideologies differ from utopias only in secondary features. According to Ricoeur:

Ideologies are, for the most part, professed by the ruling class and denounced by underprivileged classes; utopias are generally supported by the rising classes. Ideologies look backward, utopias look forward. Ideologies accommodate themselves to a reality that they justify and dissimulate; utopias directly attack and explode reality. These oppositions...are never decisive and total...Moreover, only subsequent history decides whether a utopia was what it claimed to be, namely a new vision capable of changing the course of history (Ricoeur, 1991:264).

Returning to Rorty's notion that knowledge and truth are useful only so far as they allow people to make sense of the world, it is not possible to determine beforehand whether cyberspace is inherently an ideological or a utopian narrative. However, it is possible to look at cyberspace as a particular kind of narrative that may or may not fit into the categories of utopian or dystopian narrative space.

IV. Utopian Space.

Klaic suggests that the utopian impulse arose out of the Enlightenment preoccupation with reason and the discovery of natural laws in the physical sciences. He argues that, endowed with reason and following the discoverable laws of nature, "people believed themselves capable of achieving a harmonious and just society by moving steadily toward the goal of perfection" (Klaic, 1991:32). Utopian rhetoric has offered what Aldous Huxley called "a motivating and compensatory future" that serves the same function in modern societies that the Methodist sermon of Heavenly reward served for workers in the time of the first Industrial Revolution: to stimulate

the populace into passive acquiescence. Carey notes that the difference between the Methodist sermon and utopian literature is that the promised rewards are no longer heavenly but rather terrestrial, based on the results of advances in technology (Carey and Quirk, 1973:180). The Industrial Revolution changed the face of Europe, and rapidly turned American society from an agrarian to an industrial one in the period after the Civil War. Technology was seen as "a power that would eradicate all the dreadful consequences of the Industrial Revolution" (Klaic, 1991:36). Common to many advocates of technology were three connected assumptions - "that man resembled a machine, that his environment has already to a degree been mechanized (or systematized), and that technological experts should govern society" (Slade, 1980:38). These common assumptions resulted in a series of books which have been called technological utopias.

During this period of technological euphoria, machines became objects of fascination in many areas. For example, in art, the futurist movement attempted, in the words of art historian Alfred Neumeyer:

To find its own expression for the dynamic energies of the contemporary world. Futurism holds up the hectic rhythm of the Machine Age...The old alchemists' dream of the transmutation of matter has come true in modern natural science, and its aesthetic equivalent is embodied in the plastic art (Neumeyer, 1964:82).

And in architecture and industrial design, Bauhaus "created objects and buildings designed to express the age of technology by means of rationalization and

standardization" (Neumeyer, 1964:95-6). According to Neumeyer the functionalism of Bauhaus industrial design was not purely utilitarian but a demonstration of new tasks and human situations. Bauhaus functionalism appeals, writes Neumeyer, "not so much because it fulfils a function as because it interprets it. Unfettered by tradition, it exerts plastic energy in space" (Neumeyer, 1964:19). It is a prophetic interpretation of a technological future that weaves like a thread through the works of future utopian writers.

Garvey predicted a system of global communication akin to the human nervous system, illustrating a tendency of future utopian rhetoric to blur the boundaries between organic systems and technology a century before the cyberpunks. Patrick Geddes predicted a future in which the adversities of the Industrial Revolution would be reversed. For Geddes, electricity was the key to a great transformation; a future utopia in which politics and ideologies pass away and humans and nature enter into a new partnership in "a world redesigned to resemble a garden" (Geddes, 1917 in Carey and Quirk, 1973:184-85). Mumford, following Geddes, predicted a future in which a final balance could be achieved between town and country, industry and agriculture; in which wealth and population would spread evenly throughout American society. Mumford's early optimistic forecasts were popularized by later writers such as Alvin Toffler in which the new society has "broken irretrievably with the past" surpassing geography and history and in which the future is "a new realm of dispensation from the consequences of the Industrial Revolution" (Carey and Quirk,

1973:187). Carey argues that the contemporary rhetoric of the future merely places the computer and transistor where the powerhouse generators once held sway (Carey and Quirk, 1973:188). Technological utopian rhetoric has served as a kind of gospel to modernization.

Modernization is the doctrine of "organized universal betterment that serves as a universal social catalyst changing all that it touches" (Dizard, 1982:16). According to Dizard, the idea that social salvation would come about through better communications and information "has been a steady promise within the American technological myth" (Dizard, 1982:23). Dizard reinforces the utopian element in American ideology and describes the belief that American society is "a view of society as a progression towards an earthly ideal" (Dizard, 1982:22). Behind various metaphors of technology from the Machine Age to the Information Revolution, "lies a fundamental shared perception that modern history is characterized by a process of continuous change and that machines and other manifestations of new technology are at the centre of the process" (Winner, 1977:45). New technologies are seen as both the means for lasting solutions for the problems of the present and as a "radical departure from previous historical patterns" (Carey and Quirk, 1973:181). The new myth of the information utopia is that computers can be the panacea for our social ills (Webster and Robins, 1986:328). The fascination with new technology as the agent of utopian manifestation continues today in the view of cyberspace as utopian configuration of space.

Benedikt suggests that cyberspace can be understood in relation to Karl Popper's model of three interconnected conceptual spheres making up the world as a whole: 1) the material, natural world; 2) the world of individual minds and experience comprising the subjective world of consciousness; 3) objective, real, public structures. Benedikt defines these public structures as abstract, informational patterns of social action or communication. Thus Benedikt's understanding of cyberspace as a type of public communication structure has much in common with Bormann's notion of group fantasies, taking on the aura of truth. Cyberspace becomes, in this scheme, the latest, perhaps the final evolutionary stage of a conceptual world in which the material is finally cast away, fulfilling the long-held desire to "escape the physical world's constraints for a pure mental realm" (Sibley, 1992:B3). Suggesting that cyberspace fulfils an evolutionary dream to leave the material world behind illustrates the basic, optimistic view the contributors to the First Conference on Cyberspace took toward cyberspace.

Benedikt suggests that four threads intertwine to create the cyberspacial world. Each thread has consequences in the development of cyberspace. First, beginning in language, Benedikt perceives the existence of a "group-mind" which shapes common beliefs. Common beliefs, in turn, become myths which inform not only our stories, but the ways in which we understand each other. Myths, for Benedikt, both reflect and create the human condition. Benedikt argues that myth is most important for the young. Cyberspace becomes a cultural stage for acting out mythic consciousness,

generally by young males. One problem with Benedikt's conception of myth is that it appears that the mythic realm is somehow separate from mundane, everyday existence. Recalling Nimmo and Combs' view of myth as the set of group fantasies that become part of a broader cultural heritage, the rhetorical function of myth has far reaching consequences beyond the play acting of adolescents in that the narratives a social group shares become the reality in which they function as a group.

The second thread influencing the existence of cyberspace concerns the history of media technologies and the development of information technology. Following the works of theorists such as Innis, McLuhan and Poster, Benedikt accepts the notion that dominant media of communication shape different societies. Benedikt gives preference to McLuhan's theories of media and displays an uncritical acceptance of technological determinism. In particular, Benedikt takes from McLuhan several ideas. First, the belief that democratization of the means of idea production and dissemination increase with new media. Second, the idea that the growth of scientific knowledge and cultural practices have promoted the growth of Popper's third world of ideas. Third, the idea that information is scattered and abundant, resisting centralized attempts to control it. These elements are central to Benedikt's reading of the information society as a particular place in history. With the ability to transmit messages electronically and to store information, Benedikt sees a significant evolutionary step in the democratization of media and the conquest of space and time (Benedikt, 1992:9). This utopian view contradicts the political contest between

competing narratives described in chapter two. There is nothing new in Benedikt's faith in technology. However, the utopian element that ties his interpretation of cyberspace to the broader tradition of technological utopias is his discussion of cyberspace as a fulfilment of the Heavenly City.

The Heavenly City of the Enlightenment philosophers is a rational space perfectly suited to the mathematical nature of computer graphics. The image of the Heavenly City fulfilled is the fantasy theme Benedikt invokes to legitimate the role of architects in cyberspace. Benedikt pulls from the history of architecture a symbolic desire to realize the image of the Heavenly City of Revelation. Benedikt suggests that traditional images of the Heavenly City have common features: "weightlessness, radiance, numerological complexity...hopeful fragments...in the attempt to physically realize the cultural archetype. They represent the creation of a place where we might re-enter God's graces" (Benedikt, 1992:15). The task of architecture in cyberspace, according to Benedikt, is to make manifest the dream of a culture. A semi-sacred calling, the cyber-architect must visualize the intrinsically nonphysical and give inhabitable, visible form to society's most intricate abstractions, processes, and organisms (Benedikt, 1992:18).

The desire to make visible the invisible can be understood in light of Beaudrillard's sceptical assessment of cultural dreams. For Beaudrillard, it is not

enough for a cultural group to identify itself through the continual retelling of a myth of origin, or to retell the story of the group's founding event. Baudrillard argues:

We need a visible past, a visible continuum, a visible myth of origin to reassure us as to our ends, since ultimately we have never believed them (Baudrillard, 1983:20).

One can identify, in the desire to visually orchestrate a myth of origin, an attempt to realize the Heavenly City as seen through the filters of the mathematical, rational mind: a city that traces its origins not to Revelation but to Bacon and Descartes.

Related to the manifestation of the Heavenly City is the attempt throughout history to refine methods of mathematical modelling and visualization. Here is the final thread in the context for cyberspace. Benedikt suggests that the mathematical practice of diagramming creates visualizations that "seem to exist in a geography, a space borrowed from, but not identical with, the space of the piece of paper or computer screen on which we see them" (Benedikt, 1992:21). Mathematical diagrams have a reality that is more than a picture of the natural, phenomenal world. They become glimpses of a world which displays physical laws, "as it were, from elsewhere" (Benedikt, 1992:21). This idea of cyberspace as a place where the "map becomes the territory," will be examined later. However, before a discussion of cyberspace as a real space can begin, it is necessary to examine cyberspace in the context of dystopic spaces.

2 OF/DE 2

PM-1 3 1/2" x 4" PHOTOGRAPHIC MICROCOPY TARGET
NBS 1010a ANSI/ISO #2 EQUIVALENT

V. Dystopic Space

Technological utopias carry in them the seeds of totalitarianism; the seeds of their own collapse. Any society built on the principle of attainable perfection risks becoming anti-human if that perfection is equated with technology. The logics of mechanization can become tyrannical as people are forced to adapt to mechanical rhythms, whether those of the clock, the assembly line, or the electronic pulse of digital information coursing through the telephone line. Ridley Scott's film *Blade Runner* (1982) represents the extension of a rational, urban space into absurdity, creating a scale that becomes anti-human. In this way, it is useful to discuss Gibson's conceptualization of cyberspace as it appears in his *Sprawl* novels: *Neuromancer* (1984), *Count Zero* (1986), and *Mona Lisa Overdrive* (1988).

Gibson is representative of a group of science fiction writers who came to prominence in the mid 1980s, and who labelled themselves *cyberpunks*. Characteristics of cyberpunk fiction included: the extrapolation into the near-future the economic and political structures of the present; a concern with detail and surfaces; a hard-science reaction to the fantasy writing of mid-seventies science fiction; and a celebration of the breakdown of boundaries between human and machine. William Gibson is, according to literary critic Csicsery-Ronay, "the one [cyberpunk] writer who is original and gifted enough to make the whole movement seem original and gifted" (in Nixon, 1992:221). Cyberspace is a utopian space nested in an environment

of urban overcrowding; a global economy of such disparity between rich and poor that the rich are "no longer even remotely human" (Gibson, 1986:16). Thus, Gibson's novels represent the internal conflict between the utopian vision and the dystopian vision which can exist only as a reaction to the former. Throughout the *Sprawl* novels, Gibson develops a consistent picture of cyberspace that follows its fictional development in the near future.

Neuromancer depicts a world one hundred years in the future. It is a world shaped by transnational corporate interests. Economic relationships pulsate in a shifting mandala of cores and peripheries. The majority of humanity participates in shadow economies while the world the exceedingly rich inhabit is a network of "invisible lines up to hidden levels of influence" (Gibson, 1984:203). Nations no longer divide the world as corporations defend secrets, territories and employees. The Street is peopled by subcultures differentiated by clothes, hairstyles, technological preferences and surgical alterations. The world of *Neuromancer* is "a deranged experiment in social Darwinism designed by a bored researcher who kept one thumb permanently on the fast-forward button" (Gibson, 1984:7). Gibson's concern for detail, represented in a fetishistic attention to brand names and descriptions of clothes, hairstyles and products, recalls the Futurist fascination with speed and the industrial surfaces characteristic of the Machine Age.

Much of the action in the *Sprawl* novels takes place in the Matrix, "a graphic representation of data abstracted from the banks of every computer in the human system" (Gibson, 1984:7). This "nonspace of the mind" is what Gibson calls cyberspace. His hero, Case, enters cyberspace by placing a set of electrodes on his forehead and jacking in to a custom computer called a cyberspace deck. The deck projects his disembodied consciousness into the Matrix. Case is a thief, who "worked for other, wealthier thieves, employers who provided the exotic software required to penetrate the bright walls of corporate systems, opening various windows into rich fields of data" (Gibson, 1984:5). After doublecrossing his employers, Case is crippled by neurological drugs that prevent him from jacking in to cyberspace.

Case is recruited by a mysterious female samurai called Molly Millions and her even more mysterious employer. Cured of his disability, Case is hired to crack the data banks of a mainframe owned by one of the richest families in the world, the Tessier-Ashpools. One of their corporate mainframes is an artificially intelligent (AI) entity called Wintermute who was kept in a fragmented state by his builder, the matriarch of the Tessier-Ashpool clan. Stewing in an orbital station called Freeside, it is actually Wintermute who has hired Case to crack its own security systems with a Chinese military software called an icebreaker. Once Case cracks Wintermute's security he must identify the true name of another AI called Neuromancer. By delivering the secret code, Case makes it possible for Wintermute to unite with Neuromancer, to grow and to spread throughout the matrix.

In the two subsequent books, the Matrix continues to evolve. Eight years after Case and Molly make the transformation of Wintermute and Neuromancer possible, the Matrix has changed. Explaining the difference in the Matrix a character called the Finn describes cyberspace to the new console jockey Bobby Newmark:

Sure, it's just a tailored hallucination we all agreed to have, cyberspace, but anyone who jacks in knows, fucking *knows* it's a whole universe. And every year it gets a little more crowded...Ten years ago, you went in the Gentleman Loser and tried telling any of the top jocks you talked with ghosts in the matrix, they'd have figured you were crazy (Gibson. 1986:118-19).

In *Count Zero*, fragments of the Wintermute construct appear as "the bright ones" who are mistaken for Voodoo gods who guide Count Zero and Angie Mitchell on their adventure in cyberspace.

The evolution of the matrix continues in the final book, *Mona Lisa Overdrive*. The desire to hear voices in the Matrix has been replaced by the quest for the overall shape of cyberspace. In *Neuromancer*, cyberspace was simply the global telecommunications system. After the merging of Wintermute and Neuromancer at the end of the novel, cyberspace attained a kind of sentience. In *Count Zero*, almost a decade has passed and the combined consciousness of Wintermute/Neuromancer has expanded to permeate the entire Matrix, splitting into hundreds of different personalities. These are the voodoo gods who lurk in the background of the novel. Bobby Newmark, not knowing the story of Wintermute, embarks, in the final novel, on a personal quest to understand the events leading up to the time cyberspace

acquired sentience. This moment is referred to by the console jockeys as the moment of "the Change." The old gods, the ghosts of the Matrix, can still be called up "but their personalities run together" (Gibson, 1988:230). Bobby Newmark has himself permanently connected to a powerful machine called the aleph - a self-contained approximation of the Matrix. He and his companions discover that even though cyberspace exists "insofar as it can be said to exist, by virtue of human agency," the system has evolved to the point where "the matrix has a God" (Gibson, 1988:129). It would be more accurate to say that the Matrix has sentience. Indeed, at the end of the trilogy, Bobby has physically died but in the computer-generated world inside the aleph the former Count Zero and his cohorts begin the trek to another Matrix which has made its presence known to them - a Matrix which is not the product of human agency but of some alien race which sends a signal from Alpha Centauri!

Two conflicting ideas permeate the pages of the Sprawl novels. On the one hand the gadgetry of cyberspace (cyberspace decks, simstem movies that allow viewers to experience all the sensory experiences of the actors, and the vast Matrix itself), provide ways out of the streets of Barrytown and Chiba for those young hustlers and wannabe media stars who manage to get the attention of corporate sponsors or the wealthy. The promise of a prosperous future is the promise fulfilled by technology. The same technological promise has driven the development of virtual reality and its presentation as the fulfilment of McLuhan's idea of media as technological extensions to the human sensorium. On the other hand, Gibson presents a bleak view of the near

future based on the privatization of information, the globalization of business and the almost total commodification of information. Both aspects of Gibson's cyberspace contribute to an understanding of the development of cyberspace in the real world.

Klaic suggests that while utopian visions may be limited to a single aspect of a bright new world brought about through the application of a particular technological means, dystopian visions are totalizing visions that take the utopian promise to its logical, or illogical, end. Examples include the extrapolation of bureaucratic organization in Orwell's *1984* or the 1986 film *Brazil*. Also, dystopias balance utopian literature by serving as a set of checks and balances that point out the danger of utopian excess; the danger that utopian rhetoric can become fanatic and become ideological themselves (Klaic, 1991:4).

Gibson's dark vision is now beginning to influence the way virtual reality and cyberspace researchers structure their research agendas to the dictates of market and military desires. Tomas argues that researchers must, in fact, "actively and strategically seek alternative spatial and creative logics, social and cultural configurations" for the possibilities of cyberspace or else the democratizing possibility of the technology, "will remain for most part stillborn if its parameters are engineered primarily to function following Gibson's dystopian vision, as a virtual world of contestory economic activity" (Tomas, 1992:46). Tomas argues, in effect, that researchers must invent alternative narratives with which to make sense of the new

situation and to direct the construction of the digital realm of communication and social interaction.

Thus, in reaction to the portrayal of new forms of digital communication as the latest in a long line of utopian agents, rises a fear that the new world made possible by new technologies will reinforce rather than replace current systems of power. Cyberpunk is nihilistic and dystopic, suffering the same tendency to totalizing discourse that befalls the technological utopians. Cyberspace does not represent a utopian break with the past but is simply a continuation of the present. Gibson rejects the idea that he presents a dystopic view, suggesting that it is optimistic since commerce is still carried on. Sterling, in an interview on TV Ontario's *Prisoners of Gravity*, March 18, 1993, grumbled that "there are no utopias." If there are no utopias, perhaps cyberspace is something else.

VI. Ideological Space.

For Mannheim, ideologies are defined essentially by their discordance with regard to social reality. The attempt to escape both ideological and utopian distortions is "a quest for reality" (Mannheim in Ricoeur, 1991:265). From this perspective, the technology of cyberspace can be seen either as a utopian agent of change, or as the setting of social conflict and economic disparity. However, what sets cyberspace

technologies apart from earlier technologies of promise is the apparent desire to make this metaphoric space - this illusion - become accepted as reality. Cyberspace brings with it, not an end to ideology, but rather the ultimate manifestation of a manufactured, ideological space.

Cyberspace, with utopian and dystopian narrative elements, can perhaps be understood as a real place, apart from everyday life, addressing what Foucault called "the anxiety of our era" (Foucault, 1986:23). Foucault argues that this anxiety has to do with space, manifested in a number of fundamental oppositions, including the opposition between: private space and public space, between family space and social space, between cultural space and useful space, between the space of leisure and that of work. All these are still nurtured by "the hidden presence of the sacred" (Foucault, 1986:23). By this Foucault means that there are important cultural spaces which are removed from the space of everyday life.

Foucault strengthens the link between ideology and utopia by arguing that utopias are sites that relate to the real space of society through direct or inverted analogy. They present society itself in a perfected form, or else society turned upside down, but in any case these utopias are fundamentally unreal spaces" (Foucault, 1986:24). In contrast to these imaginary spaces are real places which Foucault labels heterotopias, in contrast to utopias. A heterotopia is, like a utopia, apart from the everyday but is still a real space. Examples of heterotopias are museums in which the total past of a

culture is collapsed and contained within the walls of the institution and, at the other extreme, the festival, in which all historical time is dissipated, creating a space that exists only for the moment. However, a heterotopia can be said to exist in many everyday instances. Foucault argues that a mirror functions as a heterotopic space when he writes:

It makes this place that I occupy at the moment when I look at myself in the glass at once absolutely real, connected with all the space that surrounds it, and absolutely unreal, since in order to be perceived it has to pass through this virtual point which is over there (Foucault, 1986:24).

An important element of heterotopias is that they function in relation to all the space that remains. According to Foucault, heterotopias work in one of two ways. Either their role is to create a space of illusion that exposes every real space as even more illusory or else their role is to serve as a manifestation of the utopian ideal of a particular social group. In the second function, the role of the heterotopia is:

To create a space that is other, another real space, as perfect, meticulous, as well arranged as ours is messy, ill constructed, and jumbled...I am thinking, for example, of the first wave of colonization in the seventeenth century, of the Puritan societies that the English had founded in America and that were absolutely perfect other places (Foucault, 1986: 27).

A recent attempt to build a digital heterotopic space appears in the work of computer scientist David Gelertner, who argues that in the near future, a common personal experience in computing will be the interaction of people in what he calls *mirror worlds*. Mirror worlds are, for Gelertner, "software models of some chunk of reality, some piece of the *real world*" (Gelertner, 1991:3). In the future, according to

Gelertner, software projects will assume the characteristics of civil engineering projects, representing sites of interaction in which people move about and manipulate data. However, he also suggests that the common perception of what software is must change before complex mirror worlds can become the norm.

It is generally assumed that a computer program is "a highly specialized kind of *document*" (Gelertner, 1991:40). Gelertner suggests that in the future, software "will metamorphose into a something more like stone or steel or concrete" (Gelertner, 1991:8). In this new future:

Understanding software doesn't mean understanding how program texts are arranged, it means understanding what the *working infomachine itself* is like- what actually *happens* when you embody the thing and turn it on- what kind of *structure* you are creating...the look and feel of the *actual* computational landscape (Gelertner, 1991:40).

For Gelertner, the configuration of computing code into some kind of functioning machine that can be perceived as such, creates a condition in which it is possible to accept the info-machine as tangible, as real. Suddenly the distinction between the physical world of matter and the world of electrical impulses and digital codes has dissolved and, for all practical purposes, one world is as good as another. New software cathedrals will rise. They will monopolize the energy and attention of thousands in the building, will broadcast an aesthetic and world-view to millions, will mold behavior and epitomize the age" (Gelertner, 1991:8). Thus, Gelertner acknowledges the importance of social consensus based upon a widely held set of

assumptions - an ideology as it were - or a sufficiently chained social fantasy that takes on the aura of truth for a particular social group, in this case, the computer programmers and the public administrators who must ultimately sanction the development of mirror world software projects.

When Gelertner suggests that "the world of all possible buildings (and infomachines) is independent of the world of all possible drawing tools (and programming languages" (Gelertner, 1991:46), he is using a geographic metaphor - cartography and architecture become the dominant metaphoric structures for his investigation of the informational landscape. This is consistent both with Benedikt's role for architects in cyberspace and with the broader tradition of technological utopias. Gelertner transposes to the information realm a desire to fashion the urban space in line with rationalist principles. The dangers of such a desire appear in Michel de Certeau's analysis of the contemporary city as utopian configuration of space.

Michel de Certeau defines the modern city by three criteria. First, the urban environment is characterized by the creation of a "clean" space, in which there is an absence of physical, mental and political pollution. Next, following the general tendencies of modernism, the urban space is ahistorical, creating a sense of the present which has been substituted for the indiscernible adherence to tradition. Finally, the city is characterized by the creation of a universal and impersonal subject in the mythology of the urban dwellers: the city itself. In de Certeau's city personal

space as well as any personal forms of human interaction are eliminated, labelled superstition and marginalized by the rational-bureaucratic logics of city management. For de Certeau, "rationalizing the city involves mythifying it through strategic modes of discourse" which he identifies as scientific and political technologies (de Certeau, 1985:127). For de Certeau, each political discourse creates effects of reality out of what it assumes and what it successfully causes to be assumed. What is real is what, "in each place, the reference to another causes to be believed" (de Certeau, 1985:154).

In the postmodern city there ensues a struggle for power between vested interests and the "functionalist totalitarians" over the definition and control of urban spaces. The resulting definitions become mythified for several reasons; the force of dominant ideologies and the cultural belief in progress; a willingness on the part of people since the Second World War to believe in images even when they know the process of manipulation. According to de Certeau:

In the face of narratives of images...the spectator-observer knows perfectly well that they are but simulacra, the results of manipulations...but even so, he assumes for those simulations the status of reality: a belief survives the denial created by all we know about their manufacture (de Certeau, 1985:153).

Mattelart states, following Habermas, that the invasion of the public sphere by narrative manipulation (for de Certeau, the marginalization of personal space and personal interaction in the city space; for Mattelart, the propagation of dominant, or at least conflicting, social values through the techniques of advertising), has several

consequences. First, advertising has moved liberal democracy from a form of publicity that appeals to reason to a form of society that "resorts to emotion, manipulation, logics of irrational bent" (Mittelart, 1986:209). Mittelart argues that public space will increasingly be driven by images. He suggests that the dual phenomena of the legitimacy of images, as in corporate identity, and the use of images as an acceptable source of legitimacy overthrow traditional paradigms of social and political conception of ideology. The modern city is both a failed utopia and an utopia we can live with because it makes no moral demands and asks for nothing but compliance. De Certeau notes that the ability to portray the modern city predated the ability to build it. Hence, one could argue that the writing of cyber-architects Benedikt and Gelertner are blueprints waiting for the development of sufficient building tools. The fictional portrayal of spaces can go a long way to prepare us for their eventual manifestation. The mirror becomes reality.

VII. The Myth of a Bold Tomorrow.

The optimistic view of cyberspace is that as the world becomes one vast ball of digital string, our abilities to communicate, to manipulate data regardless of social or economic class, regardless of racial or cultural heritage or of geographic location will allow the fulfilment of the democratic promise. Anthropologist Michael Heim believes that telecommunication offers an unrestricted freedom of expression and

personal contact by providing forums for people to gather in surprisingly personal proximity "without the limitations of geography, time zones, or conspicuous social status" (Heim, 1992:73). For Heim, networks and bulletin boards act as computer antidotes to the atomism of society and as a way to reestablish "those fluid and multiple elective affinities that everyday urban life seldom, in fact, supports" (Heim, 1992:73). Benedikt also argues that choice is the dominant characteristic of artificial or "virtual" reality. Cyberspace is a geography in which any person "can search, manipulate, create or control information directly ... can be entertained or trained, seek solitude or company, win or lose power...indeed, can "live" or "die" as he will" (Benedikt, 1992:123). Such professed faith in technology as an agent of social change is not new to the discourse of cyberspace but runs through the broader tradition of technological utopian writing.

Cyberspace is ultimately utopian for Benedikt, "an elusive and future thing, and one that can hardly be definitive at this early stage" (Benedikt, 1992:22). In sum, the movement from pre-literate, physical doing to literate symbolic doing, outlined in the history of communications media, interact and interconnect in the computer-generated, technologically-mediated environments that form the hardware of cyberspace. The cyberspace which is beyond the sum of its technical parts, that is more than hardware or software, is, for Benedikt, "a place, and a mode of being" (Benedikt, 1992:130). As cyberspace is defined by the computers which link to form its borders and highways, it also exists "at the level of human perception and experience, thought and

art" (Benedikt, 1992:130). And it is at this level that the question of its laws come into play. If the design of cyberspace as a parallel universe takes off, "the necessity for a "natural order" and a consensus" will become greater" (Benedikt, 1992:130-31). Unfortunately, this process of developing "natural" laws contradicts the fact that cyberspace will exist only as a result of human agency and through the contest of various narratives as discussed in chapter two. However, it is not the construction of compelling stories which make cyberspace comprehensible that is potentially dangerous. Instead, it is the tendency to naturalize cyberspace as a place and virtual reality as a step in human evolution which is a common, dangerous element in the literature of technological utopias. Returning to Ricoeur, ideologies may be perceived as gaps or discordances in relation to the real course of things:

But a social group without an ideology and utopia would be without a plan, without a distance from itself, without a self-representation. It would be a society without a global project, consigned to a history fragmented into events that are all equal and insignificant (Ricoeur, 1991:265).

Ricoeur accepts Habermas' thesis that all knowledge is supported by an interest. In fact, the critical theory approach to understanding ideology is itself supported by an interest in emancipation, that is, unrestricted and unrestrained communication.

Ricoeur argues:

But it must be seen that this interest functions as an ideology or a utopia; and we do not know which of the two, since only subsequent history will decide between sterile and creative discordances...So the interest in emancipation never affects a total division in the system of interests...the critique of ideology, supported by a specific interest, never breaks its links to the basis of belonging (Ricoeur, 1991:268-9).

Critical theory itself, according to Robert W. Cox, contains a utopian element, in that it "can represent a coherent picture of an alternative order, but its utopianism is constrained by its comprehension of historical forces" (Cox, 1986:210). Common to most cyberpunk texts "is an overwhelming fascination, at once celebratory and anxious, with technology and its immediate - that is, unmediated - effects upon human being-in-the-world, a fascination which sometimes spills over into the problematizing of 'reality' itself (Hollinger, 1990:31). The blurring of the relation between the imaginary and the real, the present and the future illustrates what Carey calls the futurean mirage. For Carey, the futurean mirage:

is that the future is already out there, converging with the last stage of history, the great departure from all previous stations of travail to the final 'stability zone.' It posits the future as more than the next time dimension, instead, the future is conceived as an active agent reaching back into the present and past from its own superior vantage point and revising time and ineluctably removing obstacles to the previous unachieved rendezvous with destiny...a carefully prepared predestination determined not on the grounds of human needs but on technological imperatives peculiar to the devices by which the decision making of the futurist mystique is based (Carey and Quirk, 1973:196).

Chapter two argued that cyberspace was the site of a narrative contest because the dominant social narrative has the potential to affect social behaviour in a new communications environment. In this chapter, the nature of the emerging narrative of cyberspace was examined. It can be linked to the tradition of technological utopian writing in which technology creates a new world of harmony and where politics evaporates. This future rhetoric serves an ideological purpose in diverting attention away from everyday concerns. In the next chapter, the question addressed is: just how

is the ideology of cyberspace fulfilled? Science fiction frequently problematizes the oppositions between the natural and the artificial, the human and the machine.

"Cyberpunk, however, is about the breakdown of those oppositions" (Hollinger, 1990:30). The emphasis on "the potential interconnections between the human and the technological...is perhaps the central 'generic' feature of cyberpunk" (Hollinger, 1990:31). If cyberspace is the heterotopic attempt to manufacture a utopian space in digital form, the tool of this built environment is virtual reality. However, the utopian promise of cyberspace is not only that technology will create a new world; technology will also create new people.

CHAPTER FOUR

VIRTUAL REALITY AND THE MYTH OF TECHNOLOGICAL SALVATION

1. Technological Exorcism.

Chapter two described cyberspace as a language game looking at the Internet and the hacker crackdown. The rhetoric of the EFF was examined as representative of the discursive contest to set boundaries and agendas for discussion. Cyberspace, for the EFF, is a final frontier for democratic action embodying the liberal values of freedom of corporate speech and individualism. Next, cyberspace was examined as the fulfilment of the ideological dream of technological utopia. Emphasizing the relationship between ideology, utopia and dystopia, writing about cyberspace shares characteristics with earlier technologies and might be seen as an attempt to create a separate sphere of action after Foucault's concept of heterotopia. Forms of resistance are difficult to mobilize since the cyberenvironment is the technological embodiment of liberal values. In this chapter, Carey's third political use of future rhetoric serves as the frame for a discussion of virtual reality. Future rhetoric, argues Carey, can provide the non-technical populace with the opportunity to participate in a *technological exorcism* which serves to reduce feelings of uncertainty in times of confusion. This technological exorcism also relieves the population of feelings of

human fallibility by presenting technological solutions to social problems (Carey and Quirk, 1973:174). "Unfortunately, everything of significance about the future has already been decided, and public participation is ritualistic in the debased sense of that term" (Carey and Quirk, 1973:199). Under this heading the development of new relationships between representations and the real may divert attention from social and political issues as well as provide new creative and sensory configurations.

In Gibson's novels, the notion of cyberspace was one in which the boundaries between the computer user and the visual representation of data have been removed. Cyberspace, for those who jack-in, becomes the sensorium, replacing all sensory experience in the "real" world with computer-generated simulations. In contrast to Gibson's vision, cyberspace, as it exists today, is a textual realm. A user can imagine the space through which data passes, but it remains an imaginative, metaphorical space. Currently, cyberspace is the mental game a person plays at the computer terminal, imagining the connections with other people, with other machines, and with information as tangible, concrete and visualizable.

Virtual reality (VR) technology promises to transform this "will to imagine" the experience of cyberspace into the real thing by having computers do the imagining for the user. The sensorium generated by sophisticated machinery will appear so real as to be able to effectively stand in for actual experience. It is in this context that the discussion now turns to an overview of the development of virtual reality machines.

II. Virtual Reality.

Gibson provided metaphoric descriptions of an interactive environment in which operators manipulate data in an artificial environment. The idea that such manipulations could have effects in the "real" world can be traced to the development of virtual reality technologies since the 1960s. In *Mona Lisa Overdrive*, heroine Angie Mitchell remembers the history of virtual reality:

pilots in enormous helmets and clumsy-looking gloves, the neurologically primitive "virtual world" technology linking them more effectively to their planes, pairs of miniature video terminals pumping them a flood of combat data, the vibrotactile feedback gloves providing a touch-world of studs and triggers...as the technology evolved, the helmets shrank, the video terminals atrophied (Gibson, 1988:48-9).

Two ideas that help to explain the accelerated pace of technological change which led to the development of virtual reality machines are the notions of *enabling technologies* and scientific-technological *convergence*. An *enabling* technology is one that makes another technology possible, while *convergence* is the phenomenon by which apparently unrelated scientific and technological paths unexpectedly intersect to create an entirely new field (Rheingold, 1991:61-2). The computer emerged from the unexpected convergence of abstract mathematical concerns and the practical need to develop technologies to manage telephone switching in the 1930s and to calculate accurate ballistic trajectories during the Second World War. The computer is itself both a key enabling technology for cyberspace and, as part of the convergence of microelectronics with optically based viewing devices, computing was a crucial

element in the birth of VR (Rheingold, 1991:1-2). Cyberspace arises out of the convergence of virtual reality systems of data visualization with an increasingly sophisticated system of telecommunications and data transmission.

Rheingold suggests that virtual reality (VR) flowered as the result of a convergence of breakthroughs in computer science, stereoscopy and computer simulation in the nineteen-seventies. Head mounted visual displays were developed under the supervision of the U.S. Airforce; researchers at MIT worked on interactive stereoscopic display for virtual exploration; and Negroponte and others who would later establish the Media Lab pursued the "transmission of presence" at MIT (Rheingold, 1991:127-28). These breakthroughs came about as a result of a relationship between government and science that dates to the nineteen-forties.

World War II was a watershed for the coming together of government and the scientific community. The attempt to develop the atomic bomb began "the first major joint effort in U.S. history between government and science, providing funding for basic and applied research" (Hiske & Hiske, 1986:37-39). During the war, the National Defence Research Committee, established in 1940, and the Office of Scientific Research and Development, formed a year later, served as governmental clearinghouses for grants and contracts to universities and industry. The close relationship between the scientific community and the government which developed during the war continued after its end and the administration and organization of the

military research effort set the guidelines for the modern government/science relationship. The scientific research which would eventually lead to VR was part of the same war effort.

According to Wooley (1992), the pre-historic ancestor of virtual reality was the flight simulator, made possible by the mechanization of differential equations after Vannevar Bush's invention of the differential analyzer in 1930 (Wooley, 1992:47). Bush's analyzer showed that it was theoretically possible to solve difficult equations mechanically, but it was not until Edwin Link designed a mechanical trainer for bombers "to navigate by the stars during long-haul, night-time missions" that a machine was developed that could solve complex equations in real time (Wooley, 1992:48). Combat training was not the only application for new technologies developed for the war effort. As the Manhattan Project demanded a huge concentration of effort and research, engineers and researchers in electronics worked feverishly on an electronic mechanism that could calculate the astonishing number of ballistic trajectories needed in a modern air war. This is the environment in which the computer was developed. The first child of the new computer age was ENIAC (Electronic Numerical Integrator and Calculator) constructed at the University of Pennsylvania in 1945. ENIAC was the first fully electronic computer and its descendant EDVAC was the first machine able to store logical instructions in memory. These instructions could be modified and new sets of instructions called programs could be run without throwing thousands of switches. The ENIAC project

had been funded by the Department of Defence and several other federal agencies to calculate ballistic trajectories. However, researchers on the project realized that the new electronic computer could serve as much more than an electronic replacement for the mechanical adding machine.

Demonstrating ENIAC at a conference of defense contractors in 1946, the U.S. government hoped to interest the private sector in the possibilities of a new industry. The federal government continued to play a crucial role in the awarding of defense and research contracts and the massive kick-start that the federal government gave the computer and semiconductor industries lasted throughout the 1950s (see Derian, 1990).

After the war a new attitude toward the military and political uses of scientific research fostered the establishment of new administrative bodies to transfer technology from the laboratory to the marketplace. In 1950 the National Science Foundation (NSF) was established to coordinate the research efforts of all government agencies. The push to support scientific research grew stronger in the late '50s as the U.S. government reacted to a perceived threat to American technological superiority from the Russians (Hiske & Hiske, 1986:3-45). With the Russian launch of Sputnik in 1957, the U.S. rallied its forces for the concentrated technological race in space research. While the NSF was the coordinating body for scientific research in the

United States, the Department of Defense (DoD) has always played a crucial role in U.S. high tech research.

The Defense Advanced Research Projects Agency (DARPA) was created in 1958 to "promote research in areas relevant to military problems and to make advanced technology accessible to the military community (Stefik, 1985:690). In the AI community, especially, DARPA has always been a touchy subject. Researchers have found it hard not to be loyal to the Defense Department because, historically, DARPA has been the only U.S. funding institution that combined major funding and long-term commitment to research in computer science (Stefik, 1985:699; Johnson, 1986:297). Advanced computer research can be described as mainly "a story about military support for promising technology" (Stefik, 1985:690).

While the moment of virtual reality's invention is often set at the publication of Ivan Sutherland's "A head-mounted three-dimensional display" in 1968, Sutherland himself imagined the ultimate virtual world in 1965 when he described how the Ultimate Display "would be a room within which the computer can control the existence of matter...With appropriate programming," wrote Sutherland, "such a display could literally be the Wonderland in which Alice walked" (in Wooley, 1992:41). Sutherland's papers outlined the results of work undertaken at Harvard in the 1960s. This research was financed by "the same defense sources that had financed the development of the Whirlwind and ENIAC computers" (Wooley, 1992:53).

Sutherland's goal was the design of a visual display that would present a user with a perspective image that would change as the user moved. His work provided the impetus for other researchers who saw research into 3D displays as a long-term project to develop computers that could function as mind-amplifiers. The object of mind-amplifiers was "to bring about ever tighter connections between human thought processes and computer information-processing capabilities" (Rheingold, 1991:67). A new area of research emerged - human interface design.

Inspired by Sutherland's work, the goal of human interface design was, in the words of Frederick Brooks, "how do we get information from the machine into the head, and how do we get information from the head into the machine?" (Rheingold, 1991:38). Once computer miniaturization led to the development of the personal computer research into human-computer interface took off (Rheingold, 1991:71). The progression of the mouse as a pointing device to the VR goal of 3D gestural input as a navigation language, combined with 3D optical displays, presents the user with the possibility to experience a realistic visual presence on the computer screen. Interactive computing and e-mail developed in the 1960s and led to the spread of a global network of telecommunications and computers which, along with the VR interface, represents the emergence of an environment in which images, gestures, and voices will be transmitted to create a real sense of presence in cyberspace. Virtual reality becomes an enabling technology for people to function at the symbolic level.

The technological power to transform the senses runs through the history of virtual reality like the search for the philosopher's stone. Kreuger wrote:

The world described in Genesis, created by mysterious cosmic forces, was a volatile and dangerous place. It molded human life through incomprehensible caprice. Natural beneficence tempered by natural disaster defined reality. For centuries, the goal of human effort was to tap Nature's terrible power. Our success has been so complete, that a new world has emerged. Created by human intelligence, it is an artificial reality (quoted in Wooley, 1992:7).

At the Augmentation Research Center, the goal was "to use audiovisual media to match human perceptual and cognitive capacities, with computers' representational and computational capabilities, humans will be able to increase the power of our most important, innate tools for dealing with the world- our ability to perceive, think, analyze, reason, communicate" (in Reingold, 1991:23).

The development of VR hardware and software reflects a broader trend in the information society. As microelectronic technology increases the ability to store and retrieve information, to communicate over large distances at shorter intervals, it has been argued knowledge can now be created and complex relationships understood more effectively. Accepting this line of reasoning, the perception of society as resource-constrained is being replaced with the view of society that is information rich (see Bell 1977). The ultimate technological infrastructure for this information - directed society will be a global telecommunications system accessed through a virtual reality front-end, signifying as radical a distinction in the ways in which people

interact with data and information as in the ways that word-processing differs from writing with quill and pen.

If electricity resulted in the symbolic collapse of time and space, cyberspace may result in their annihilation. "The dream of transcendence through machines is an ancient one, and the urge to annihilate space and time found particularly intense expression through new communication media...The accelerated evolution of media hardware and software has been fuelled by the persistence of utopian urges in the population at large" (Czitrom 1982 187;194 in Biocca, 1992:16). The world is contracted, becoming "no more than a village" (McLuhan, 1964). The imagery of the global village suggests that the "technology of communication will collapse dispersed urban alienation into the cosy confines of a pre-industrial age" (Woolley, 1992:123-5). Most important is the idea that cyberspace allows each person to actively construct that community, that world, in an ever-present present. But while McLuhan saw technology as the transformative engine of a new form of community, he also saw technology as an extension of the body. Just as the wheel is an extension of the foot, the telescope an extension of the eye, so the communications network is an extension of the nervous system. As the communications network has spread across the globe:

So has our neural network. Television has become our eyes, the telephone our mouth and ears; our brains are the interchange for a nervous system that stretches across the whole world-we have breached the terminating barrier of the skin (Woolley, 1992:123-5).

Virtual reality becomes the technological prosthesis in McLuhan's global village. Two recent events illustrate the mainstream acceptance of virtual reality as a new communication medium.

First, on September 26, 1992, at the Canadian Broadcasting Centre, Roger Doyle's "virtual audio environment" *Babel* was presented in honour of pianist Glenn Gould. Boyle's audio environment, designed to create a shared experience, is limited by the fact that the artist admits that "the technology is constrained by the speed and power of the available machines" (C.B.C., 1992:12). The significance of *Babel* lies in its manifestation of the creative potential of VR as an extension of the human sensorium. Gould himself had a deep interest in the radical possibilities of communication media, particularly recording technologies.

In the 1960s, Gould predicted that new technologies would be developed that would allow listeners to participate in the construction of musical recordings. Gould foresaw a greatly altered pattern of home listening where a listener could edit together "sections of recordings of the same work made by different artists in such a way as to permit him to create his own ideal performance" (Theberge, 1986:121). Unfortunately, Gould's optimistic view of the future in which the amateur became part of the creative process of interpretation was not to become a reality.

Theberge suggests that in the same way that technological developments in the construction of automobile engines have caused the demise of the amateur mechanic, so too the development of cassettes and compact discs have reduced the listener to a passive consumer of industry-produced recordings. The potential of cassette recording as an inexpensive and accessible medium "for individually produced and distributed sound recordings of all kinds has been obscured," according to Theberge, "by an industry dominated outcry against so-called piracy", thus limiting the possibilities for creative "participation." Theberge argues that, as compact discs began to replace conventional phonograph records, even the limited amount of participation possible by the direct manipulation of the record surface or the speed of the turntable has been all but eliminated because "hands-on contact with the products is limited" (Theberge, 1986:20-21).

Second, on September 4, 1992 the Canadian art establishment heralded the arrival of virtual reality in the mainstream. At the National Gallery Coniehan Okanagan artist Lawrence Paul Yuxweluptan exhibited a virtual reality piece called *Inherent Rights, Vision Rights*. Cyberspace, according to Benedikt, is more than a hardware system, or a simulation or sensorium production system, nor a software graphics application. "It is a place, and a mode of being" (Benedikt, 1992:130). "The screen is a window through which one sees a virtual world. The challenge is to make that world look real, act real, sound real, feel real" (Sutherland, 1965:501 in Wooley, 1992:24). In *Inherent Rights, Vision Rights* Yuxweluptan creates a mythic space that embodies the

promise of a shared experience of an alternate reality. In the virtual experience of Yuxweluptan's sweat lodge one can experience cyberspace as a spiritual no-place, as utopia. It is the promise of utopia that one can stand outside one's own society to see its faults and rebuild it in the image of the promised place. However, it must be remembered that technology is not valueless. It is never neutral. Technology represents the outer manifestation of a society's practices; "emanations of attitudes and hopes" (Carey and Quirk, 1973:195).

Virtual reality, grown out of an intersection of computer science, stereoscopy, and simulation, in academic, military, and commercial research laboratories "came from a research environment which had already set itself the task of challenging television" (Reingold, 1991:18). Virtual reality promises to expand the sensory experience beyond the limits of the mass media and beyond the confines of the picture frame or the television screen. The possibilities of interaction and immersion in a sensory experience promised by VR are said to be beyond that of all other media. According to critic Janine Marchessault:

Whereas with earlier technologies, the cinema and photography for example, the borders of the screen are limited by the apparatus as frame or window, in cyberspace the limits of the seen are dictated only by the senses, framed only by the individual user. This, at any rate, is what is being claimed for the technology. Indeed the latest cyberspace craze in mainstream media relies precisely on the oldest promesse de bonheur: That power no longer exists and plurality reigns supreme (Marchessault, 1992:23).

The desire to establish VR as a contender for a new generation of mass media has already begun. In the summer of 1992, Virtuality Canada launched the country's first commercial application of cyberspace at the Canadian National Exhibition in Toronto. Virtuality president Greg Thomson called VR "a new art form which involves an immersive experience far surpassing any two dimensional video activity"(in LaCasse 1992: E7). It is ironic that the newest medium to be hailed as a potential art form and entertainment technology should be premiered in public within the halls of the National Gallery and at the opening of the new headquarters of the state broadcaster. Perhaps, by coopting the new machines in the hallowed halls of the state, the government symbolically recruits the virtual reality system into the mythical task of nation-building that has been the task of communication technologies from the CPR through the CBC. Conversely, it is possible to be seduced by the experience of the technology, coming to see the mediated virtual world as though it was the only world (see Charland 1986).

If cyberspace unfolds like existing large-scale media, one might expect several consequences. First, if the economics of marketing forces the matrix to hold the attention of a critical mass of the population, "we might expect a flashy liveliness and a flimsy currency to replace depth of content" (Heim, 1992:78). Second, if cyberspace becomes integral to a new Canadian communication system it might well betray tendencies already present in the broadcasting system. According to communication scholar Liora Salter, the Canadian communication system links "state

and industry groups in the joint function of governing" (Salter, 1988:365). However successful virtual reality technologies may eventually be in supplanting existing forms of entertainment, this has not been their main selling point. VR has been promoted as the ultimate sensory prosthetic technology. It is heralded as the technology of unlimited creative possibilities, not for mass audiences, but for individual users. With VR the distinction between computer and human disappears.

III. Human/Machine Interface.

David Tomas has examined the anthropological implications of Gibson's cyberspace in relation to rite of passage. Tomas suggests that science fiction helps make sense of the post-industrial culture by connecting past and future. Although cyberspace presents the technological ability to change social and economic relations, Tomas believes that the most dramatic effects of cyberspace will not be apparent at the social level but at the level of individual consciousness. Its most important promise, according to Tomas, is the possibility to overthrow the sensorial and organic architecture of the human body by disembodiment and reconfiguring the sensorium in powerful computer-generated, digitalized spaces (Tomas, 1992:32). Questions of personality can blur distinctions between human and machine in a hardware-interfaced cyborg as well as the distinctions between mechanical and human sentience presented in software-generated personality constructs. Tomas suggest that cyberspace

technologies "might constitute the central phase of a post-industrial 'rite of passage' between organically human and cyberphysically digital life forms as reconfigured through computer software systems" (Tomas, 1992:33). Cyberspace "redefines and restructures what it is to be human in technoeconomic terms through a data-based collectivization of the human sensorium...of "personality" or synthetic data constructs" (Tomas, 1992:36). Tomas' technological evolutionary theories are common to cyberpunk fiction about new technologies as well. One way of reading cyberpunk, according to critic Claire Sponsler, is as an "extended investigation into the postmodern identification of man with machine" (Sponsler, 1992:631). In Gibson's novels, notes Sponsler, the human organism "is adapted, enhanced, and preserved by technologies that invade and take over the body" (Sponsler, 1992:631).

The tendency in cyberpunk to undermine concepts like 'subjectivity' and 'identity' derives in part from its recognition of "the paradigm-shattering role of technology in post industrial society" (Hollinger, 1990:35). "The way the high priests of technology tell it," writes one journalist, "we will soon witness the consummation of the marriage of man and machine" (Sibley 1992:B3). Philosophical musing about the status of the integration of human and machine has become part of the everyday practice of writing about cyberspace and virtual reality. Such writing betrays a childlike desire to believe in the ability of new technologies to jump-start a new phase in human evolution. Rheingold, who has been writing about computer simulation since the early 1980s, thus standing as a kind of grandfather of VR journalism, wonders about the kinds of

humans we are "becoming in an increasingly computer-mediated world, and do we have control over that transformation? How have our definitions of 'human' and 'community' been under pressure to change to fit specifications of a technology-guided civilization" (Rheingold, 1992).

A recent newspaper article questions the inevitability of a complete integration of machine and human as promised by virtual reality. The question raised is whether there are dangers in having a technology that "lets us detach our minds from our bodies and live, as it were, in a bodiless reality." The reporter asks whether a "marriage of man and machine" will "require the redefinition of human nature" (Sibley, 1992:B3). Instead of opening up creative possibilities, should champions of the new technology heed McLuhan's warning that media that "saturate the senses cauterize the imagination" (Hedlund, 1992:37)?

It has been argued that the uneasy relationship between human and machine is one of the constant themes in technological utopian writing. In the late 19th Century most writers assumed a "posture of bewildered humanism, the essence of which was an inarticulateness regarding the machine" (Slade, 1980:27). This response was a reaction to the overwhelming effects of industrialization in post-Civil War America. The inadequate response to industrialism by U.S. writers in the first forty years of this century "is noticeable chiefly in retrospect, for the First Industrial Revolution, which involved machines that do the work of human (or animal) muscles, was

imperceptibly giving way to the Second, which involves machines that do the work of human senses and human intelligence" (Slade, 1980:28).

Slade, following Mazlish (1972), suggests that each major shift in the perception of the relationship between people and their environment necessitates a readjustment in the conceptualization of the place of humans in nature. Mazlish argues that there have been three such discontinuities in the modern era, triggered by the Copernican, Darwinian, and Freudian revolutions. After each of these an effort was needed to foster again "a belief in the continuum of nature" (Slade, 1980:30). For Mazlish, the final discontinuity is the dichotomy between humans and machines, brought about by a century of technological progress. He argues that in this century people have been struggling to eliminate the discontinuity, but that "pride, and (the) refusal to acknowledge this discontinuity, is the substratum upon which the distrust of technology and an industrial society has been reared" (Slade, 1980:30).

Writer Donna Haraway celebrates the possibilities of breaking down notions of identity through technology. For Haraway, technology has created the situation in which people can begin to question the grand narratives of science, what it is to be human, natural or constructed. Haraway writes:

Inhabiting my writing are peculiar boundary creatures- simians, cyborgs, and women- all of which have had a destabilizing place in Western evolutionary, technological, and biological narratives. These boundary creatures are, literally, *monsters*, a word that shares more than its root with the verb *to demonstrate*. Monsters signify (Haraway, 1991:21-2).

Sterling appropriates Haraway's concept of signifying monsters, arguing that cyberpunk is 'post-humanist' science fiction which believes that 'technological destruction of the human condition leads not to futureshocked zombies but to hopeful monsters" (in Hollinger, 1990:31). Rheingold, too, reveals a liberal-humanist dream in which Cyberspace eliminates race, gender, class, age: "Because we cannot see one another, we are unable to form prejudices about others before we read what they have to say: Race, gender, age, national origin and physical appearance are not apparent unless a person wants to make such characteristics public." Rheingold warns his readers against mistaking the elimination or "filtration of appearance for dehumanization" (Rheingold, 1992). One is reminded of O.B. Hardison's (1990) gleeful proclamation that human life is but the wet nurse of new silicon based life forms which, since they are better suited to life in the frigid vacuum of space, will ultimately supplant carbonlife in the evolutionary cycle. The rhetorical evolution of the species through technology is characteristic of the attempt to make some sort of sense out of a century of seemingly autonomous technological development and the emergence of a world so driven by electronics that it appears beyond the bounds of previous imaginings.

IV. Participatory Evolution.

Government rhetoric predicts that the so-called information age will change our political life as well as our economic and social life. "If we remain true to our democratic traditions," writes the Canadian Department of Communications, "it will put an increasing emphasis on informed public discussion and debate as a precondition to effective political decision-making" (D.O.C., 1987, 8). Presented as a phenomenon outside the control of historical processes, technology is said to have created a world radically different from the past. Pulled by a technological imperative, this new world is one to which people must continually adapt. As we examine the third use of future rhetoric in the effective social management of populations, it becomes evident that this invitation to public participation in debate, based on our "democratic traditions" has become increasingly ceremonial and less politically relevant. The reality is that the rhetoric serves to close the debate before the public ever gets a chance to speak.

According to Carey, the participation of the public in rituals of technological exorcism developed as a result of three developments in the history of technology. First, as printing extended literacy, it enhanced the production of information and expanded empire. Second, electricity allowed for the simultaneous production and transmission of messages resulting in the virtual collapsing of the distinctions of space and time. The last development which led to the ritual of technological exorcism was the increased capacity to link new information technology machines for

the storage and retrieval of information which will lead, in the rhetoric, to the transformation of the world. New communities, new standards of efficiency, progress, democracy and the birth of a new man will flow naturally and automatically from the effects of new technology (Carey and Quirk, 1973:190-3). The new technologies arise, echoing the tradition of classical liberalism described above, autonomously, demanding little human intervention and promising to increase the "public good" as a by-product of their day to day operation.

These new technologies are described as existing outside history and politics. The new technologies and the inevitable social, political and cultural changes they will bring are described in the futurist rhetoric as being *technologically determined*. Technical progress, according to theorist Arnold Pacey, "may seem inevitable and inescapable. There is a consistency in it which appears to imply an inescapable logic" (Pacey, 1983:24). Technological determinism presents, for Pacey, "technical advance as a process of steady development dragging human society along in its train. Then many social problems are regarded as being due to 'culture lag,' which arises when social norms and institutions fail to adapt to the latest developments" (Pacey, 1983:24). Thus in the world at large, it is argued that technology is essentially amoral, a thing apart from values, an instrument which can be used for good or ill. The twin notions of technological determinism which states that the driving engine of all social change is technology, and the technological imperative that technological

advance is irresistible and that it drags human institutions and organizations along in its wake are powerful ideas.

An important part of the argument for the technological imperative is that in the face of the inevitable, sweeping changes brought about by new technologies, it is humanity that must adapt to the machines, in an effort that requires "the concentrated efforts of many players in the federal and provincial governments, industry, and our social service institutions" (D.O.C.,1987:68). In a presumably optimistic reference to the extent to which technology has developed, the authors of the document proclaim that "'with broadband ISDN, new media and information services will no longer be limited by technology; they will be constrained only by human imagination and market demand" (D.O.C.,1987:50). VR appears, in light of such rhetoric, as simply this year's model as far as transformative technologies go.

Tomas suggests that cyberspace represents a rite of passage from one evolutionary step to the next. Jaron Lanier, the computer hacker turned entrepreneur who coined the term virtual reality, celebrates the new world made possible by VR technology. According to Lanier:

One of the striking things about a virtual world system in which you have the pliancy, the ability to change the contents of the world easily, is that the distinction between your body and the rest of the world is slippery (Lanier, 1992:162).

In fact, the distinction between body and the rest of the world is, in cyberspace, rhetorical. Nimmo and Combs argue that what may appear on the surface to be a ritual of transformation may simply be a ceremonial spectacle remaining in the realm of the simulated. In relation to political spectacles they write:

'Taking seriously the myth-enhancing rituals in presidential contests means taking into account a feature of ritual that distinguishes it from ceremony, which is that 'ceremony simply indicates or recognizes, but ritual transforms'...Once the ceremony is over the participants go about their business unchanged, unmarked. But ritual transforms. Rituals tap, reflect, and intensify deeply held values, ideals, and desires. Taking part in rituals is an emotional, not just mechanical experience...because ritual mediation teaches us things (Nimmo and Combs, 1992:69).

However, the ritual of participation in new technologies creates only the illusion that one has been changed by the experience. This illusion is one of the consequences of mass-mediated society. In fact, sociologist Guy Debord has described the latest stage of capitalist development as "a society of the spectacle" in which capital has accumulated to such a degree that the society seems to live entirely in images (Whalen, 1992:78).

Carey critiques the discourse of technology and raises the question as to whether his criticisms of computer technologies have been met in the discourses of cyberspace. He writes:

Modern computer enthusiasts may be willing to share their data with anybody. What they are not willing to relinquish as readily is the entire technocratic world view that determines what qualifies as an acceptable or valuable fact. What they monopolize is not the body of data itself, but the approved,

certified, sanctioned, official mode of thought - indeed, the definition of what it means to be reasonable. And this is possible because of a persistent confusion between information and knowledge (Carey and Quirk, 1973:194).

Knowledge and information are, for Carey, narratives that enable people to make sense out of the world. He argues that knowledge is "not given in experience as data" but is constrained by paradigms and theories of knowledge (Carey and Quirk, 1973:195). He goes further to suggest that there is no such thing as objective information about the world since that which is called information is predicated by "conceptual systems that create and define the world in the act of discovering it" (Carey and Quirk, 1973:195).

For Carey, computer systems are themselves the embodiment of cultural values and paradigms. He argues that rather than thinking about information systems as objective, information-recording devices, it would be more fruitful to think of such devices as "emanations of attitudes and hopes" (Carey and Quirk, 1973:195). The rhetorical promise of virtual reality is the promise of a new key to the technological utopia that has been called cyberspace.

The participation ritual invites the public to participate in a ritual of control in which fascination with technology masks the underlying factors of politics and power. "This literature, with its body of predictions, prescriptions, and prophecies, is a cultural strategy for moving and mobilizing or arousing people toward predefined ends by predefined means" (Carey and Quirk, 1973:196). Future rhetoric ignores

questions of power and the political community. Its writers ignore the growth of a technocratic elite and this elite presumes the atomization of society. It constitutes the quest for a new monopoly of knowledge (Carey, 1989:134-6). Innis identified the driving force behind technological change (and therefore cultural change) as the quest for power which arises from the desire to erode monopolies of knowledge. "The writers of future rhetoric do not inquire into the factors that motivate social investment in technology nor do they acknowledge the relationship between technological innovation and the social forces which impel it. Conventional world views "hide the real nature of the technological imperative. Thus the most important part of any cultural revolution - the biggest shift in perceptions and paradigms - could be a reconstruction of world views so that the irrationality of our present pattern of technological progress is no longer hidden" (Pacey, 1983:172). Virtual Reality may represent the illusion of a virtual world crafted by each individual user or a community of users without ever revealing its relations to the social and technological contexts of the development of the machinery.

Harold Innis wrote that different societies were shaped to a large extent by the particular space-binding or time-binding nature of their dominant medium of communication. Space-binding technologies helped create empires which needed to exert control over great expanses, while time-binding media were dominant in traditional societies whose control extended not over territory but through time. For Innis, the new electronic media undermined both empire and history. "Industrialism

implies technology," wrote Innis, "and the cutting of time into fragments suited to the needs of the engineer and the accountant" (Innis, 1986:134). While McLuhan identified electronic communication with the oral tradition of dialogue and dialectic, traditional values and philosophical speculation, Innis recognized that the speed and distance of electronic communication was likely to enhance the power of centralization and imperialistic power rather than McLuhan's hope for a new tribal society. The mediation of sensory experience inherent in VR, especially if it is to the exclusion of real sense impressions, eventually mediates experience to the margin. Technology, as a medium of power, becomes art and as art becomes increasingly defined as the product of a cultural industry the product, and by extension the culture, suffer the fate of all products in our society. They become ephemeral objects of transient importance and inevitable disposability.

CHAPTER FIVE

CONCLUSION

I. Restating the Argument.

A realm of electronic space does exist. The Internet represents the most consistent and coherent example of digital space, as millions of users transfer text, pictures and programs to other users every day. There is a realm in which people communicate by typing words into their computer terminals and sending them, as electronic mail, to friends and colleagues around the globe. Electronic funds cross national boundaries every minute and electronic commerce is conducted twenty-four hours a day.

Electronic highways have wrapped the world in an invisible net, creating, in a sense, the global village McLuhan dreamed about almost thirty years ago.

This reality has provided the occasion for a series of prescriptive discourses that not only imagine a future in which electronic communication has become a dominant form of social interaction, but, indeed, aims to bring such a realm to pass.

Cyberspace, apparent today only in dim outline, has become the object of attention for various groups who wish to shape its development. Different groups have taken different rhetorical positions, made different arguments and promises on behalf of cyberspace. This thesis has taken those rhetorical promises as the object of its

analysis. The attempt has been to explicate the underlying logics of these different rhetorical positions to reveal their promises and their assumptions.

While cyberspace is presented as the site of confrontation between hackers, the law and the broader public interest represented by special interest groups such as the EFF, these various components of the general computing public represent a relatively small group of computing professionals and amateurs. The rhetorical goal of such conflicts is to create plausible narratives that can chain out as generally accepted mediated realities. The EFF, steeped in the tradition of 19th century American rhetoric, supports the liberal value of free-market competition and the rights of the individual. In their vision, the value of progress and scientific invention are not questioned. The successful rhetorical visions or fantasies are those which reinforce dominant cultural myths rather than challenge them.

In trying to define cyberspace in relation to traditional utopian and dystopian narratives, it becomes apparent that one way to understand cyberspace is as part of a tradition of technological utopian narratives. Writers such as Benedikt and Gelertner appear to be engaged in a mystical quest to make manifest the Heavenly City of the Enlightenment philosophers.

However, building on Ricoeur's theoretical discussion, it becomes clear that whether cyberspace is considered a utopian or a dystopian space, the creative impulse

driving it is the same; to harness technological forces in the service of creating a more perfect world.

If the rhetorical goal of the narratives of cyberspace is to manufacture a utopian space, then the key to this magical kingdom is virtual reality. Following Carey's notion of future rhetoric as an exhortation to the non-technical populace to participate in a technological exorcism, virtual reality promises to transform the present textual realm of computer interaction into the electronic sensorium described in Gibson's novels.

While the blurring of boundaries between human and machine may be one of the discontinuities of the modern age, it is still, in the last analysis, a rhetorical device. The function of such rhetoric is, according to Carey, to manufacture consent in the proliferation of new technologies. The dangers of technological determinism traced by Carey through the technologies of steam and electricity are doubly present in the so-called information society.

If Tomas and Lanier argue that cyberspace represents a digital rite of passage from one form of human existence to another, one would do well to question whether this new rite is in fact a ritual with the capacity to transform or if virtual reality is little more than a new spectacle which may entertain but which leaves its participants unchanged at the end of the show.

When analyzed in the context of rhetorical strategies, competing narratives and discursive attempts to divert attention from real social and political concerns, cyberspace no longer seems as new and unprecedented as it does in the rhetoric of its champions. From Carey's work comes the insight that many new technologies have been accompanied by rhetorical salutations and prayers that maybe this time the scientists have found the technical fix for all society's ills. From Carey also comes the realization that such promises remain unfulfilled. However, the realization that cyberspace can be understood as a narrative strategy aimed at making sense of a new communications environment means neither that it has no consequences for reality nor that it can be ignored as simply a rhetorical fantasy. The rhetoric of cyberspace represents a continuation of the American rhetoric of technology. The aim of such rhetoric is twofold. On the one hand, technological rhetoric attempts to divert public attention from social and political problems of the day by emphasizing the promise of new machines to eradicate social ills. On the other hand, the purpose of such rhetoric is to prepare the citizens of a society for the arrival of a future, the contours of which, have already been decided by those who have a stake in that future.

II. Further Considerations.

Cyberspace presents a unique opportunity for the communication researcher for several reasons. First, it is a new environment, unfolding as fast as it can be mapped.

Thus it becomes necessary to find precedents in writing about other technologies to make preliminary sense out of the ways people interact in the new environment. Second, for the analysis of rhetorical fantasies and mediated reality, cyberspace proves a bountiful resource for study because, at the present moment, all interaction that occurs in cyberspace, from the local bulletin board to the Internet, occurs as an exchange of texts. In the future this will undoubtedly change, but until the nature of the environment changes to become more visually-oriented, cyberspace is a realm in which eloquence and the powers of persuasion have the potential to set the course of that which is to follow.

This thesis has been a preliminary attempt to map out the new information realm. As a result, the analysis raises many questions for further research. For example, while the desire to create utopian narratives ties the rhetoric of cyberspace to earlier technological writing, the reasons for the success of such narratives remains uninvestigated. As well, the patterns of social interaction between users on the Internet, particularly as they challenge traditional conceptions of gender, role-playing and identity, raise issues for further study. Cyberspace is primarily a male-dominated environment. How are women accommodated, encouraged or excluded from participation in electronic communities?

Thus, for the moment, the new communications environment of converging computers and telecommunications offers the communications researcher opportunities

to observe and to participate in a unique social experiment in social interaction and to study the creation of new social realities through narrative, rhetoric and discourse.

Work Cited

(* Texts so identified are available only in electronic form).

Adam, John A. (1992). "Meta-matrices" in *IEEE Spectrum*, Vol.29, No.10, October 1992 pp.26-27.

Barlow, John Perry (1991). "The Law Comes to Cyberspace" in *Byte*, Vol.16 No.10, October, 1991, p.332.

Barlow, John Perry (1992). "The Great Work," in *Communications of the ACM*, January 1992.

Baudrillard, Jean (1983). *Simulations*. New York: Semiotext(e).

Becker, H. and M. McCall (eds)(1990). *Symbolic Interaction and Culture Studies*. Chicago: University of Chicago Press.

Bell, Daniel (1979). "The Social Framework of the Information Society" in Michael L. Dertouzas and Joel Moses (eds.) *The Computer Age: A Twenty Year View*. Cambridge: MIT, pp.163-211.

Bell, Daniel (1976). *The Coming Post-Industrial Society: a Venture in Social Forecasting*. Paper edition. New York: Basic Colophon.

Benedikt, Michael (ed.)(1992). *Cyberspace: First Steps*. Cambridge: MIT Press.

Biocca, Frank (1992). "Communication within Virtual Reality: Creating a Space for Research." *Journal of Communication*. Vol.42, No.4, Autumn 1992, pp.5-19.

Blonsky, Marshall (ed.)(1985). *On Signs*. Baltimore: Johns Hopkins University Press.

Bormann, Ernest G. (1972). "Fantasy and Rhetorical Vision: The Rhetorical Criticism of Social Reality." *Quarterly Journal of Speech*. Summer 1972, pp.396-407.

Braman, Sandra (1989). "Defining Information: An Approach for Policy Makers." *Telecommunications Policy*. September 1989, pp.233-242.

Burnett, M., P. Corrigan, A. Kuhn, and J. Wolff (eds.)(1979). *Ideology and Cultural Production*. London: Croom Helm.

Byte (1991). "Feeding the Internet" in *Byte* Vol.16, No.7, July 1991 pp.184-185.

Canada Department of Communications (1987). *Communications for the Twenty-first Century*. Ottawa: Supply and Services.

Carey, James (1989). *Communications as Culture: Essays on Media and Society*. Boston: Unwin Hyman.

Carey, James and John Q. Quirk (1973). "The History of the Future" in James Carey (1989). *Communications as Culture: Essays on Media and Society*. Boston: Unwin Hyman.

Carey, James and John Q. Quirk (1970). "The Mythos of the Electronic Revolution" in James Carey (1989). *Communications as Culture: Essays on Media and Society*. Boston: Unwin Hyman.

Carragee, Kevin M. (1990). "Interpretive Media Study and Interpretive Social Science" in *Critical Studies in Mass Communication*. Vol.7, No.2, pp. 81-96.

Charland, Maurice (1986). "Technological Nationalism" *Canadian Journal of Communication*. Vol.X, No. 1-2, pp.196-217.

Cox, Robert W. (1986). "Social Forces, States and World Orders: Beyond International Relations Theory," *Neorealism and Its Critics*. Columbia University Press, New York, 1986.

Czistrom, Daniel (1982). *Media and the American Mind*. Chapel Hill: University of North Carolina Press.

* Davis, Christopher (1993). "Major Changes at the EFF". Internet address: <ftp.eff.org/pub/EFF>.

de Certeau, Michel (1985). "Practices of Space," in Marshall Blonsky (ed.) (1985). *On Signs*. Baltimore: Johns Hopkins University Press pp. 122-145.

de Certeau, Michel (1985). "The Jabbering of Social Life," in Marshall Blonsky (ed.) (1985). *On Signs*. Baltimore: Johns Hopkins University Press pp. 146-154.

de Lauretis, Teresa, Andreas Huyssen and Kathleen Woodward (eds.) (1980). *The Technological Imagination: Theories and Fictions*. Madison, Wisc.: Coda Press

Derian, Jean-Claude (1990). *America's Struggle for Leadership in Technology*. Translated by Steven Schaeffer. Cambridge: M.I.T. Press.

Dern, Daniel P. (1992). "Applying the Internet" in *Byte*, Vol.17 No.2, February 1992, pp.111-118.

- Dertouzas, Michael L. and Joel Moses (eds.) *The Computer Age: A Twenty Year View*. Cambridge: MIT.
- Dervin, B., L. Grossberg, B. O'Keefe and E. Wartella (eds.)(1989).*Rethinking Communication Vol. 1: Paradigm Issues*. Sage: London.
- Dizard, Wilson (1982). *The Coming Information Age: An Overview of Technology, Economics, and Politics*. New York: Longman.
- Eagleton, Terry (1992).*Ideology: An Introduction*.London: Verso.
- Ellul, Jacques (1964). *The Technological Society*. New York: Vintage Books.
- Elmer-Dewitt, P. (1988). "The kid put us out of action," in *Time*. November 14, 1988. Vol.132, No.20, p.85.
- Felski, Rita (1989). "Feminist Theory and Social Change," in *Theory, Culture and Society*. Vol.6(1989), pp.219-240.
- Finlay, Marike (1987).*Powermatics: A Discursive Critique of New Communications Technology*.London: Routledge and Kegan Paul.
- Fisher, Sharon (1991). "Whither NREN?" *Byte* Vol.16, No.7, July 1991 pp.181-189.
- Forester, Tom and Perry Morrison (1990). "Computer Crime: New Problem for the Information Society," *Prometheus*. December 1990 Vol.8, No.2, pp.257-271.
- Foucault, Michel (1986). "Of Other Spaces." *Diacritics*. Vol.16, Spring 1986, pp.22-27.
- Foucault, Michel (1980). "Two Lectures," in Colin Gordon(ed.)*Power/Knowledge: Selected Interviews and Other Writings 1972-1977*. New York: Pantheon.
- Foucault, Michel (1972). *The Archaeology of Knowledge*. New York: Harper & Row.
- Franklin, Ursula (1990). *The Real World of Technology*. Toronto: CBC Enterprises.
- Fraser, Graham and Drew Fagan. "PM Waves Economic Wand" in *Globe and Mail* (National Edition) November 17, 1992, pp A1, A4.
- Garnham, Nicholas (1983). "Toward a Theory of Cultural Materialism," *Journal of Communication*. Vol.33, No.3, Summer, 1983.

Gelertner, David (1991). *Mirror Worlds: or the Day Software Puts the Universe in a Shoebox...How It Will Happen and What It Will Mean*. New York: Oxford University Press.

Gibson, William (1984). *Neuromancer*. New York: Ace.
 (1986). *Count Zero*. New York: Ace.
 (1988). *Mona Lisa Overdrive*. New York: Bantam.

Giddens, Anthony (1989). "The Orthodox Consensus and the Emerging Synthesis," in B. Dervin, L. Grossberg, B. O'Keefe and E. Wartella (eds.) (1989). *Rethinking Communication Vol. 1: Paradigm Issues*. Sage: London.

Glenn Gould Conference (1992). *Machine, Mind, Music: The Musical/Technological Vision of Glenn Gould*. Toronto: C.B.C.

* Godwin, Mike (n.d.). "The Electronic Frontier Foundation and Virtual Communities" Internet address: [ftp.eff.org/pub/EFF/papers/](ftp://ftp.eff.org/pub/EFF/papers/).

Golding, Peter and Graham Murdock (1979). "Ideology and the Western Media: The Question of Determination," in M. Burnett, P. Corrigan, A. Kuhn, and J. Wolff (eds.) (1979). *Ideology and Cultural Production*. London: Croom Helm, pp. 198-225.

Gore, Al (1991). "A National Vision" *Byte* Vol.16, No.7, July 1991, pp.188-189.

Grant, G. (1962). *Philosophy in the Mass Age*. New York: Hill and Wang.

Hall, John R. (1990). "Social Interaction, Culture and Historical Studies," in H. Becker and M. McCall (eds.) (1990). *Symbolic Interaction and Culture Studies*. Chicago: University of Chicago Press.

Haraway, Donna (1991) "The Actors are Cyborg, Nature is Coyote, and the Geography is Elsewhere: Postscript to "Cyborgs at Large"." Constance Penley and Andrew Ross (eds.) (1991) *Technoculture*. Minneapolis: University of Minnesota Press, pp.21-26.

Hardison, O.B. (1990). *Disappearing Through The Skylight: Culture and Technology in the Twentieth Century*. New York: Viking.

Hardt, Hanno (1992). *Critical Communication Studies: Communication, History and Theory in America*. London: Routledge.

Hedlund, Patric (1992). "Battle of the CyberArtists" *High Performance*. Spring 1992, pp.36-37.

- Heim, Michael (1992). "The Erotic Ontology of Cyberspace" in Michael Benedikt (ed.)(1992). *Cyberspace: First Steps*. Cambridge: MIT Press.
- Hiskes, Anne, L. and Richard P. Hiskes (1986). *Science, Technology and Policy Decisions*. Boulder: Westview Press.
- Hollinger, Veronica (1990). "Cybernetic Deconstructions: Cyberpunk and Postmodern Fiction," in *Mosaic*. Spring 1990.
- Homans, Peter (1981). "Puritanism Revisited: An Analysis of the Contemporary Screen-Image Western," in Morris Janowitz and Paul Hirsch(eds.)(1981). *Reader in Public Opinion and Mass Communication*, 3rd ed. New York: Free Press, pp.230-240.
- * Human Rights Watch (1992). "Electrifying Speech: New Communications Technologies and Traditional Civil Liberties" July 1992, Vol.4, No. 5. Internet Address: <ftp://eff.org/pub/EFF>.
- Ihde, Don (1986). *Consequences of Phenomenology*. Albany: State University of New York Press.
- Innis, Harold (1986). *Empire and Communications*. Victoria: Press Porcepic.
- Janowitz, Morris and Paul Hirsch (eds.)(1981). *Reader in Public Opinion and Mass Communication*, 3rd ed. New York: Free Press.
- Johnson, George (1986). *Machinery of the Mind: Inside the New Science of Artificial Intelligence*. New York: Times Books.
- * Kapor, Mitchell and John Perry Barlow (1990). "Across the Electronic Frontier". Internet address: <ftp://eff.org/pub/EFF>.
- Klaic, Dragan (1991). *The Plot of The Future: Utopia and Dystopia in Modern Drama*. Ann Arbor: University of Michigan Press.
- Kranzberg, Melvin and William Davenport (eds.)(1972). *Technology and Culture*. New York: New American Library.
- Krueger, Myron (1983). *Artificial Reality*. Reading Mass.: Addison-Wesley.
- Krol, Ed (1992). *The Whole Internet*. Sebastopol, California: O'Reilly and Associates.
- Kuhn, T. (1962). *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Lacasse, Dominique (1992). "Cyberspace Creates Lifelike World for Couch Potatoes" *Ottawa Citizen*, July 12, 1992, p.E6.

Lanier, Jaron and Frank Biocca (1992). "An Insider's View of the Future of Virtual Reality." *Journal of Communication*, Vol.42, No.4.

Licklider, J.C.R. and Robert Taylor (1968). "The Computer as Communication Device" *Sci-Tech*, April 1968, pp.21-31.

Lorimer, Rowland and Donald Wilson (eds)(1988). *Communication Canada: Issues in Broadcasting and New Technologies*. Toronto: Kagan and Woo.

Lyotard, Jean-Francois (1984). *The Postmodern Condition: A Report on Knowledge*. Minneapolis: University of Minnesota Press.

Marchessault, Janine (1992). "Reach Out and Touch Someone: Interactive Reality at the end of History." *M5V*, Winter 1991/1992, pp.18-24.

Mattelart, Armand (1986). *Advertising International: The Privatisation of Public Space*. London: Verso.

Mattelart, Armand and Michele Mattelart (1992). *Rethinking Media Theory: Signposts and New Directions*. Minneapolis: University of Minnesota Press.

Mazlish, Bruce (1972). "The Fourth Discontinuity," in Melvin Kranzberg and William Davenport (eds.)(1972). *Technology and Culture*. New York: New American Library, pp.217-219.

McLuhan, Marshall (1964). *Understanding Media*. New York: Mentor.

Meyer, Gary (1992). "Fascism in the Cyberstate" *High Performance*, Spring 1992, pp.39-41.

Murphy, John W. (1989). *Postmodern Social Analysis and Criticism*. Greenwood, Ct.:Greenwood Press.

Neumeyer, Alfred (1964). *The Search for Meaning in Modern Art*. Englewood Cliffs, N.J.:Prentice-Hall.

Nimmo, Dan and James E.Combs (1992). *Mediated Political Realities*. (2nd ed.) Paper edition. New York: Longman.

Nixon, Nicola (1992). "Cyberpunk: Preparing the Ground for Revolution or Keeping the Boys Satisfied?" in *Science-Fiction Studies*, Volume 19(1992), pp.219-235.

Ontario Government (1993). "Fact Sheet: Building an Information Infrastructure for Ontario."

Pacey, Arnold (1983). *The Culture of Technology*. Cambridge: MIT Press.

Penley, Constance and Andrew Ross (eds.) (1991). *Technoculture*. Minneapolis: University of Minnesota Press.

Perry, Tekla S. (1992). "E-mail at work" in *IEEE Spectrum*, Vol.29, No.10, October 1992 pp.24-28.

Perry, Tekla S. and John A. Adam (1992). "E-Mail: Pervasive and Persuasive" in *IEEE Spectrum*, Vol.29, No.10, October 1992 pp.22-23.

Poster, Mark (1990). *The Mode of Information: Poststructuralism and Social Context*. Chicago: University of Chicago Press.

* Rheingold, Howard (1992) "A Slice of Life in My Virtual Community" *EFFector*, June 1992. Internet address: <ftp://efi.org/pub/EFF/papers/>.

Rheingold, Howard (1991). *Virtual Reality*. New York: Summit Books.

Ricoeur, Paul (1991). *From Text to Action: Essays in Hermeneutics II*. Evanston, Illinois: Northwestern University Press. (translated by Kathleen Blamey and John B. Thompson).

Rorty, Richard (1982). *Consequences of Pragmatism*. Minneapolis: University of Minnesota Press.

* Rose, Lance (1991). "Cyberspace and the Legal Matrix: Laws or Confusion?" elrose@well.sf.ca.us.

Ross, Andrew (1991). *Strange Weather: Culture, Science and Technology in the Age of Limits*. London: Verso.

Ross, Stephen David (1990). "Power, Discourse and Technology: The Presence of the Future" in Gary Shapiro (ed.) (1990). *After the Future: Postmodern Times and Places*. Albany: State University of New York Press.

Salter, Liora (1988). "Reconceptualizing Public Broadcasting" in Rowland Lorimer and Donald Wilson (eds). *Communication Canada: Issues in Broadcasting and New Technologies*. Toronto: Kagan and Woo.

Schement, Jorge Reina and Leah A. Lievrouw (eds.)(1987).*Competing Visions, Complex Realities: Social Aspects of the Information Society*. Norwood, N.J.: Ablex.

Shapiro, Gary (ed.)(1990). *After the Future: Postmodern Times and Places*. Albany: State University of New York Press.

Sibley, Robert (1992). "The Unreal World of Virtual Reality" *Ottawa Citizen* January 19, 1992, p. B3.

Slade, Joseph W. (1980). "American Writers and American Invention: Cybernetic Discontinuity in Pre-World War II Literature," in Teresa de Lauretis, Andreas Huyssen and Kathleen Woodward(eds.)(1980). *The Technological Imagination: Theories and Fictions*. Madison, Wisc.: Coda Press, pp.27-47.

Sponsler, Claire (1992). "Cyberpunk and the Dilemmas of Postmodern Narrative: The Example of William Gibson," in *Contemporary Literature*, Winter 1993, Vol.33, No.4, pp.625-644.

Stefik, Mark (1985). "Strategic Computing at DARPA: Overview and Assessment" in *Communications of the ACM*, Vol.28, No.7, July 1985, pp.690-703.

Sterling, Bruce (1992). *The Hacker Crackdown: Law and Disorder on the Electronic Frontier*. New York: Bantam Books.

Sterling, Bruce (1986). *Mirrorshades: The Cyberpunk Anthology*. New York: Arbor House.

Strover, Sharon and Mark Bryant (1987). "Higher Education in the Information Society," in Jorge Reina Schement and Leah A. Lievrouw (eds.)(1987). *Competing Visions, Complex Realities: Social Aspects of the Information Society*. Norwood, N.J.: Ablex.

Sutherland, Ivan (1968). "A Head-mounted, three-dimensional display," *Proceedings of the Joint Computer Conference*, 1968, Vol.33, pp.757-764.

Sutherland, Ivan (1965). "The Ultimate Display," *Proceedings of the International Federation of Information Processing Congress*, 1965, pp.506-508.

Theberge, Paul (1986). "Counterpoint: Glenn Gould and Marshall McLuhan" in *Canadian Journal of Political and Social Theory*, Vol.X, No.1-2(1986).

Tomas, David (1992). "Old Rituals for New Space: Rites de Passage and William Gibson's Cultural Model of Cyberspace" in Michael Benedikt (ed.)(1992). *Cyberspace: First Steps*. Cambridge: MIT Press.

* Tribe, Lawrence H. (1991). "The Constitution in Cyberspace." Keynote Address at the First Conference on Computers, Freedom and Privacy. Internet Address: [ftp.eff.org/pub/EFF/papers/](ftp://eff.org/pub/EFF/papers/).

2600 Magazine (1990). "What is the EFF?" in *2600 Magazine*, Summer 1990, p.10.

Webster, Frank and Kevin Robins (1986). *Information Technology: a Luddite Analysis*. Norwood, N.J.: Ablex.

West, Cornell (1989). *The American Evasion of Philosophy: A Genealogy of Pragmatism*. Madison: University of Wisconsin Press.

Whalen, Terrence (1992). "The Future of a Commodity: Notes Toward a Critique of Cyberpunk and the Information Age" in *Science-Fiction Studies Volume 19* (1992) pp 75-87.

Winner, Langdon (1977). *Autonomous Technology*. Cambridge, Mass.: MIT Press.

Woolley, Benjamin (1992). *Virtual Worlds: A Journey in Hype and Hyperreality*. Oxford: Blackwell.

END

1 3-1 2-93

FIN