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Postmodern Virtualities*

Mark Poster

Introduction

On the eve of the 21st century there have been two innovative discussions about the general conditions of life: one concerns a possible 'postmodern' culture and even society; the other concerns broad, massive changes in communications systems. Postmodern culture is often presented as an alternative to existing society which is pictured as structurally limited or fundamentally flawed. New communications systems are often presented as a hopeful key to a better life and a more equitable society. The discussion of postmodern culture focuses to a great extent on an emerging new individual identity or subject position, one that abandons what may in retrospect be the narrow scope of the modern individual with its claims to rationality and autonomy. The discourse surrounding the new communications systems attends more to the imminent technical increase in information exchange and the ways this advantage will redound to already existing individuals and already existing institutions.

My purpose in this essay is to bring these two discussions together, to enact a confrontation between them so that the advantages of each may redound to the other, while the limitations of each may be revealed and discarded. My contention is that a critical understanding of the new communications systems requires an evaluation of the type of subject it encourages, while a viable articulation of postmodernity must include an elaboration of its relation to new technologies of communication.

For what is at stake in these technical innovations, I contend, is not simply an increased 'efficiency' of interchange, enabling new avenues of investment, increased productivity at work and new domains of leisure and consumption, but a broad and extensive change in the culture, in the way identities are structured. If I may be allowed a historical analogy: the technically advanced societies are at a point in their history similar to that of the emergence of an urban, merchant culture in the midst of feudal society in the Middle Ages. At that point practices of the exchange of com-

*From Mark Poster, *Cyberspace/Cyberbodies/Cyberpunk*, eds. Mike Featherstone and Roger Burrows (London: Routledge, 1995), pp. 79-95.

modities required individuals to act and speak in new ways,¹ ways drastically different from the aristocratic code of honor with its face-to-face encounters based on trust for one's word and its hierarchical bonds of interdependency. Interacting with total strangers, sometimes at great distances, the merchants required written documents guaranteeing spoken promises and an 'arm's length distance' attitude even when face-to-face with the other, so as to afford a 'space' for calculations of self-interest. A new identity was constructed, gradually and in a most circuitous path to be sure, among the merchants, in which a coherent, stable sense of individuality was grounded in independent, cognitive abilities. In this way the cultural basis for the modern world was begun, one that eventually would rely upon print media to encourage and disseminate these urban forms of identity.

In the 20th century, electronic media are supporting an equally profound transformation of cultural identity. Telephone, radio, film, television, the computer and now their integration as 'multimedia' reconfigure words, sounds and images so as to cultivate new configurations of individuality. If modern society may be said to have an individual who is rational, autonomous, centered and stable (the 'reasonable man' of the law, the educated citizen of representative democracy, the calculating 'economic man' of capitalism, the grade-defined student of public education), then perhaps a postmodern society is emerging which nurtures forms of identity different from, even opposite to those of modernity. And electronic communications technologies significantly enhance these postmodern possibilities. Discussions of these technologies, as we shall see, tend often to miss precisely this crucial level of social change, treating them as enhancements for already formed individuals to deploy to their advantage or disadvantage.²

The Communications 'Superhighway'

One may regard the media from a purely technical point of view, to the extent it is possible, evaluating them in relation to their ability to transmit units of information. The question to ask then is how much information with how little noise is transmitted at what speed and over what distance to how many locations? Until the late 1980s technical constraints limited the media's ability in these terms. To transmit a high quality image over existing (twisted pair copper wire) phone lines took ten minutes using a 2400-baud modem or two minutes using a 9600-baud modem. Given these specifications it was not possible to send 'real time' 'moving' images over the phone lines. The great limitation, then, of the first electronic media was that images could only be transmitted from a small number of centers to a large number of receivers, either by air or by coaxial cable. Until the end of the 1980s an extreme scarcity existed in the media highways that encouraged and justified, without much thought or consideration, the capitalist or nation-state exploitation of image transmission. Since senders needed to build their own information roads by truck at a given frequency or by constructing (coaxial) wire networks, there were only a few distributors of images. The same economies of technology, it might be said, applied to processes of information production.

Critical theorists such as Benjamin, Enzensberger and McLuhan³ envisioned the democratic potential of the increased communication capacity of radio, film and television. While there is some truth to their position, the practical model for a more radical communications potential during the first media age was rather the telephone. What distinguishes the telephone from the other great media is its decentralized quality and its universal exchangeability of the positions of sender and receiver. Anyone can 'produce' and send a message to anyone else in the system and, in the advanced industrial societies, almost everyone is in the system. These unique qualities were recognized early on by both defenders and detractors of the telephone.

In the recent past the only technology that imitates the telephone's democratic structure is the Internet, the government funded electronic mail, database and general communication system.⁴ Until the 1990s, even this facility has been largely restricted to government, research and education institutions, some private industry and individuals who enroll in private services (CompuServe, Prodigy) which are connected to it. In the last few years Internet has gained enormously in popularity and by the mid-1990s boasts 30 million users around the world (Cooke and Lehrer, 1993). But Internet and its segments use the phone lines, suffering their inherent technical limitations. Technical innovations in the late 1980s and early 1990s, however, are making possible the drastic reduction of earlier constraints. The digital encoding of sound, text and image, the introduction of fiber-optic lines replacing copper wire, the ability to transmit digitally encoded images and the subsequent ability to compress this information, the vast expansion of the frequency range for wireless transmission, innovations in switching technology and a number of other advances have so enlarged the quantity and types of information that may soon be able to be transmitted that a qualitative change, to allude to Engels' dialectical formula, in the culture may also be imminent.

Information superhighways are being constructed that will enable a vast increase in the flow of communications. The telephone and cable companies are estimating the change to be from a limit of 60 or so one-way video/audio channels to one of 500 with limited bidirectionality. But this kind of calculation badly misses the point. The increase in transmission capacity (both wired and wireless) will be so great that it will be possible to transmit any type of information (audio, video or text) from any point in the network to any other point or points, and to do so in 'real time', in other words quickly enough so that the receiver will see or record at least 24 frames of video per second with an accompanying audio frequency range of 20 to 20,000 Hertz. The metaphor of the 'superhighway' only attends to the movement of information, leaving out the various kinds of cyberspace on the Internet, meeting places, work spaces and electronic cafés in which this vast transmission of images and words becomes places of communicative relation. The question that needs to be raised is not this technological change provide the stimulus for the installation of new media different enough from what we now have to warrant the periodizing judgment of a new electronic media age? If that is the case, how is the change to be understood? A discourse on the new communications technology is in process of formation, one which is largely limited by the vision of modernity. The importance of the information superhighway is now widely recognized, with articles appearing in periodicals and the specialized zines (*Wired* and *Mondo 2000*) to general journals (*Time*, *Forbes*

and *The Nation*). Essays on the new technology vary from breathless enthusiasm to wary caution to skepticism. Writing in *Time*, Philip Elmer-Dewitt (1993: 52) forecasts: 'The same switches used to send a TV show to your home can also be used to send a video from your home to any other - paving the way for video phones. . . . The same system will allow anybody with a camcorder to distribute videos to the world. . . .'. Key to the new media system are not only the technical advances mentioned above but also the merger of existing communication technologies. Elmer-Dewitt continues, '...the new technology will force the merger of television, telecommunications, computers, consumer electronics, publishing and information services into a single interactive information industry' (1993: 52-3). Other observers emphasize the prospects of wireless technology. Writing in *Forbes*, George Gilder (1993: 107) predicts the spread of this system:

...the new minicell replaces a rigid structure of giant analog mainframes with a system of wireless local area networks...these wide and weak [replacing broadcasting based on 'long and strong'] radios can handle voice, data and even video at the same time...the system fulfills the promise of the computer revolution as a spectrum multiplier...[the new system will] banish once and for all the concept of spectrum scarcity.

Whether future communications media employ wired, wireless or some combination of the two, the same picture emerges of profound transformation.

Faced with this gigantic combination of new technology, integration of older technologies, creation of new industries and expansion of older ones, commentators have not missed the political implications. In *Tikkun*, David Bollier underlines the need for a new set of policies to govern and regulate the second media age in the public interest. President Bill Clinton and Vice-President Al Gore have already drawn attention to the problem, stressing the need for broad access to the superhighway, but also indicating their willingness to make the new developments safe for the public motive. For them the main issue at stake is the strength of the United States in relation to other nations (read especially Japan) and the health of the industries involved. Bollier (1993: 22) points to wider concerns, such as strengthening community life, supporting families and invigorating the democratic process.⁸ At this point I want to note that Bollier understands the new media entirely within the framework of modern social institutions. The 'information superhighway' is for him a transformative tool that brings new efficiencies but by itself changes nothing. The media merely redound to the benefit of or detract from familiar institutions - the family, the community, the state.

If Bollier presents a liberal or left-liberal agenda for politics confronted by the second media age, Mitchell Kapor, former developer of Lotus 1-2-3, offers a more radical interpretation. He understands better than Bollier that the information superhighway opens qualitatively new political opportunities because it creates new kind of political

the crucial political question is 'Who controls the switches?' There are two possible choices. Users may have indirect, or limited control over when, what, why, and to whom they get information and to whom they send it. That's the broadcast model.

and it seems to breed consumerism, passivity, crassness, and mediocrity. Or, users may have decentralized, distributed, direct control over when, what, why, and with whom they exchange information. That's the Internet model today, and it seems to breed critical thinking, activism, democracy, and quality. We have an opportunity to choose now. (Kapor, 1993: 5)

With Kapor, the interpretation of the new media returns to the position of Enzensberger: socialist or radical democratic control of the media results in more freedom, more enlightenment, more rationality; capitalist or centralist control results in oppression, passivity, irrationality. Kapor's reading of the information superhighway remains within the binaries of modernity. No new cultural formations of the self are imagined or even thought possible. While the political questions raised by Bollier and Kapor are valid and raise the level of debate well beyond its current formation, they remain limited to the terms of discussion that are familiar in the landscape of modernity.

The political implications of the Internet for the fate of the nation-state and the development of a global community also requires attention. The dominant use of English on the Internet suggests the extension of American power as does the fact that e-mail addresses in the US alone do not require a country code. The Internet normalizes American users. But the issue is more complex. In Singapore, English serves to enable conversations between hostile ethnic groups, being a neutral 'other'. Of course, vast inequalities of use exist, changing the democratic structure of the Internet into an occasion for further wrongs to the poorer populations. Even within the high-use nations, wealthy white males are disproportionate users. Yet technologies sometimes spread quickly and the Internet is relatively cheap. Only grassroots political mobilization on this issue will ensure wide access (Tehrani, forthcoming).

In some ways the Internet undermines the territoriality of the nation-state: messages in cyberspace are not easily delimited in Newtonian space, rendering borders ineffective. In the Teale-Homolka trial of early 1994, a case of multiple murders including sexual assault and mutilation, the Canadian government was unable to enforce an information blackout because of Usenet postings in the United States being available in Canada (Turner, 1994). In order to combat communicative acts that are defined by one state as illegal, nations are being compelled to coordinate their laws, putting their vaunted 'sovereignty' in question. So desperate are national governments, confronted by the disorder of the Internet, that schemes to monitor messages are afoot, such as the American government's idea to monopolize encryption with a 'Clipper Chip' or the FBI's insistence on building surveillance mechanisms into the structure of the information superhighway (Hotz, 1993: 22). Nation states are at a loss when faced with a global communication network. Technology has taken a turn that defines the character of power of modern governments. The effortless reproduction and distribution of information is greeted by modern economic organizations, the corporations, with the same anxiety that plagues nation-states. Audio taping was resisted by the moguls of the music industry; video taping by Hollywood; modems by the telephone industry giants. Property rights are put in question when information is set free of its material integument to move and to multiply

in cyberspace with few constraints. The response of our captains of industry is the absurd one of attempting vastly to extend the principle of property by promulgating new 'intellectual property laws', flying in the face of the advance in the technologies of transmission and dissemination. The problem for capitalism is how to contain the word and the image, to bind them to proper names and logos when they flit about at the speed of light and procreate with indecent rapidity, not arborially, to use the terms of Deleuze and Guattari, as in a centralized factory, but rhizomically, at any decentered location. If that were not enough to daunt defenders of modern notions of property, First Amendment issues are equally at risk. Who, for example, 'owns' the rights to and is thereby responsible for the text on Internet bulletin boards: the author, the system operator, the community of participants? Does freedom of speech extend to cyberspace, as it does to print? How easy will it be to assess damages and mete out blame in a communicative world whose contours are quite different from those of face-to-face speech and print? These and numerous other fundamental questions are raised by Internet communications for institutions, laws and habits that developed in the very different context of modernity.

Reality Problematized

Before turning to the issue of the cultural interpretation of the second media age, we need to consider a further new technology, that of virtual reality. The term 'virtual' was used in computer jargon to refer to situations that were near substitutes. For example, virtual memory means the use of a section of a hard disk to act as something else, in this case, random access memory. 'Virtual reality' is a more dangerous term since it suggests that reality may be multiple or take many forms.⁶ The phrase is close to that of 'real time', which arose in the audio recording field when splicing, multiple-track recording and multiple-speed recording made possible 'other times' to that of clock time or phenomenological time. In this case, the normal or conventional sense of 'time' had to be preserved by the modifier 'real'. But again the use of the modifier only draws attention to non-'reality' of clock time, its non-exclusivity, its non-finality, its lack of foundation. The terms 'virtual reality' and 'real time' attest to the force of the second media age in constituting a simulational culture. The medium has become so intense that the things mediated can no longer even pretend to be unaffected. The culture is increasingly simulational in the sense that the medium changes the things that it treats, transforming the identity of originals and reconstituting realities. In the second media age 'reality' becomes multiple.

Virtual reality is a computer-generated 'place' which is 'viewed' by the participant through 'goggles' but which responds to stimuli from the participant in a dynamic way. A participant may 'walk' through a house that is being designed for him or her, or get a feel for it before it is built. Or she may 'walk' through a 'museum' or city where the paintings or streets are computer-generated but the position of the participant is relative to their actual movement, not to a predetermined computer program, as in a 'movie'. In addition, more than one individual may experience the same virtual world at the same time, with both persons' 'movements' affecting the same 'space'.

more, these individuals need not be in the same physical location but may be communicating information to the computer from distant points through modems. Further 'movements' in virtual reality are not quite the same as movements in 'old reality': for example, one can fly or go through walls since the material constraints of earth need not apply. While still in their infancy, virtual reality programs attest to the increasing 'duplication', if I may use this term, of reality by technology. But the duplication incurs an alternation: virtual realities are fanciful imaginings that, in their difference from real reality, evoke play and discovery, instituting a new level of imagination. Virtual reality takes the imaginary of the word and the imaginary of the film or video image one step farther by placing the individual 'inside' alternative worlds. By directly tinkering with reality, a simulational practice is set in place which alters forever the conditions under which the identity of the self is formed.

Already transitional forms of virtual reality are in use on the Internet. MUDs or Multi User Domains have a devoted following. These are conferences of sorts in which participants adopt roles in a neo-medieval adventure game. Although the game is played textually, that is, moves are typed as sentences, it is highly 'visual' in the sense that complex locations, characters and objects interact continuously. In a variant of a MUD, LambdaMOO, a database contains 'objects' as 'built' by participants to improve upon the sense of reality. As a result, a quasi-virtual reality is created by the players. What is more, each player adopts a fictional role that may be different from their actual gender and indeed this gender may change in the course of the game, drastically calling into question the gender system of the dominant culture as a fixed binary. At least during the fictional game, individuals explore imaginary subject positions while in communication with others. In LambdaMOO, a series of violent 'rapes' by one character caused a crisis among the participants, one that led to special conferences devoted to the issue of punishing the offender and thereby better defining the nature of the community space of the conference. This experience also cautions against depictions of cyberspace as utopia: the wounds of modernity are borne with us when we enter this new arena and in some cases are even exacerbated. Nonetheless, the makings of a new cultural space are also at work in the MUDs. One participant argues that continuous participation in the game leads to a sense of involvement that is somewhere between ordinary reality and fiction (Dibbell, 1993).⁷ The effect of new media such as the Internet and virtual reality, then, is to multiply the kinds of 'realities' one encounters in society.

The Postmodern Subject

The information superhighway and virtual reality are communications media that extend existing forms of consumer culture. But they also depart or may depart from what we have known as the mass media or the 'culture industry' in a number of important ways. I said 'may depart' because neither of these technologies has been fully constituted as cultural practices; they are emergent communication systems whose forms are yet to be specified with some permanence or finality. One purpose of this article is to suggest the importance of some form of political concern about how these

technologies are being actualized. The technical characteristics of the information superhighway and virtual reality are clear enough to call attention to their potential for new cultural formations. It is conceivable that the information superhighway will be restricted in the way the broadcast system is. In that case, the term 'second media age' is unjustified. But the potential of a decentralized communications system is so great that it is certainly worthy of recognition. Examples from the history of the installation and dissemination of communications technologies are instructive. Carolyn Marvin points out that the telephone was, at the outset, by no means the universal, decentralized network it became. The phone company was happy to restrict the use of the instrument to those who registered. It did not understand the social or political importance of the universality of participation, being interested mainly in income from services provided. Also the example of Telefon Hirmondó, a telephone system in Budapest in the period before the First World War, is worth recalling. The Hungarians used the telephone as a broadcast system, with a published schedule of programming. They also restricted narrowly the dissemination of the technology to the ruling class. The process by which the telephone was instituted as a universally disseminated network in which anyone is able to call anyone else occurred in a complex, multi-leveled historical articulation in which the technology, the economic structure, the political institutions, the political culture and the mass of the population each played interacting roles (Marvin, 1988: 222ff). A similarly complex history will no doubt accompany the institution of the information superhighway and virtual reality.

In *The Mode of Information* (Poster, 1990) I argued that electronic communications constitute the subject in ways other than that of the major modern institutions. If modernity or the mode of production signifies patterned practices that constitute identities as autonomous and (instrumentally) rational, postmodernity or the mode of information indicates communication practices that constitute subjects as multiple and diffuse. The information superhighway and virtual reality will not be a mode of information to still further applications, greatly amplifying its diffusion by bringing more practices and more individuals within its pattern of formation. No doubt many modern institutions and practices continue to exist and indeed shape the social space. The mode of information is an emergent phenomenon that affects but does not obliterate important aspects of everyday life. It certainly does not obliterate the subject of industrial societies and has even less presence in less developed nations. The information superhighway and virtual reality may be interpreted through the poststructuralist lenses I have used here in relation to the cultural issue of subject constitution. If this is done, the question of the mass media is seen not simply as that of sender/receiver, producer/consumer, ruler/ruled. The shift to a decentralized network of communications makes senders receivers, producers consumers, rulers ruled. It requires a new logic of understanding of the first media age. The step I am making here is to temporarily to abandon that logic and adopt a poststructuralist logic of subject constitution. This does not answer all the questions raised by the second media age, especially the political ones which at the moment are particularly difficult. But it permits the recognition of an emergent political subject and a new approach to a political analysis of that cultural system; it permits the following

line of thought that confronts the possibility of a new age, avoiding the continued, limiting, exclusive repetition of the logics of modernity.

Subject constitution in the second media age occurs through the mechanism of interactivity. A technical term referring to two-way communications, 'interactivity' has become, by dint of the advertising campaigns of telecommunications corporations, desirable as an end in itself so that its usage can float and be applied in countless contexts having little to do with telecommunications. Yet the phenomenon of communicating at a distance through one's computer, of sending and receiving digitally encoded messages, of being 'interactive' has been the most popular application of the Internet. Far more than making purchases or obtaining information electronically, communicating by computer claims the intense interest of countless thousands (Dery, 1993). The use of the Internet to simulate communities far outstrips its function as retail store or reference work. In the words of Howard Rheingold (1993: 61), an enthusiastic Internet user, 'I can attest that I and thousands of other cybernauts know that what we are looking for, and finding in some surprising ways, is not just information but instant access to ongoing relationships with a large number of other people.' Rheingold terms the network of relations that come into existence on Internet bulletin boards 'virtual communities'. Places for 'meeting' on the Internet, such as 'the Well' frequented by Rheingold, provide 'areas' for 'public' messages, which all subscribers may read, and private 'mailbox' services for individual exchanges.

The understanding of these communications is limited by modern categories of analysis. For example, many have interpreted the success of 'virtual communities' as an indication that 'real' communities are in decline. Internet provides an alternative, these critics contend, to the real thing (Rheingold, 1993: 62). But the opposition 'virtual' and 'real' community contains serious difficulties. In the case of the nation, generally regarded as the strongest group identification in the modern period and thus perhaps the most 'real' community of this era, the role of the imaginary has been fundamental (Anderson, 1983). Pre-electronic media like the newspaper were instrumental in disseminating the sign of the nation and interpellating the subject in relation to it. In even earlier types of community, such as the village, kinship and residence were salient factors of determination. But identification of an individual or family with a specific group was never automatic, natural or given, always turning, as Jean-Luc Nancy (1991: xxviii) argues, on the production of an 'essence' which reduces multiplicity into fixity, obscuring the political process in which 'community' is constructed: '... the thinking of community as essence ... is in effect the closure of the political'.⁸ He rephrases the term community by asking the following question: 'How can we be receptive to the meaning of our multiple, dispersed, mortally fragmented existences, which nonetheless only make sense by existing in common?' (1991: xi). Community for him then is paradoxically the absence of 'community'. It is the matrix of fragmented identities, each pointing toward the other, which he chooses to term 'writing'.

Nancy's critique of community in the older sense is crucial to the understanding of the construction of self in the Internet. For his part, Nancy has chosen to deny the significance of new communications technologies, as well as new subaltern subject positions in his understanding of community:

The emergence and our increasing consciousness of decolonized communities has not profoundly modified [the givens of community], nor has today's growth of unprecedented forms of being-in-common – through channels of information as well as through what is called the 'multiracial society' – triggered any genuine renewal of the question of community. (Nancy, 1991: 22)

Nancy denies the relation I am drawing between a postmodern constitution of the subject and bidirectional communications media. The important point however is that in order to do so he first posits the subject as 'multiple, dispersed, mortally fragmented' in an ontological statement. To this extent he removes the question of community from the arena of history and politics, the exact purpose of his critique of the essentialist community in the first place. While presenting an effective critique of the essentialist community Nancy reinstates the problem at the level of the subject by ontologizing its inessentialism. My preference is rather to specify the historical emergence of the decentered subject and explore its links with new communications situations.

We may now return to the question of the Internet and its relation to a 'virtual community'. To restate the issue: the Internet and virtual reality open the possibility of new kinds of interactivity such that the idea of an opposition of real and virtual community is not adequate to specify the differences between modes of being-in-common, serving instead to obscure the manner of the historical construction of forms of community. In particular, this opposition prevents asking the question of the form of identity prevalent in various types of community. The notion of a real community, as Nancy shows, presupposes the fixed, stable identities of its members, the exact assumption that Internet communities put into question. Observers of participation in Internet 'virtual communities' repeat in near unanimity that long or intense experience with computer-mediated electronic communication is associated with a fluidity of identity. Rheingold foresees huge cultural changes as the effect of the use on the individual: '... are relationships and commitments as we know them possible in a place where identities are fluid? ... We reduce and encode our lives as words on a screen, decode and unpack the identities of others' (1993: 61). On bulletin boards like the Well, people connect with strangers without the social baggage that divides and alienates. Without visual cues about gender, ethnicity and social status, conversations open up in directions that otherwise might be avoided. Participants in these virtual communities often express the sense of little inhibition and dialogues flourish and develop quickly. Yet this sense of the conviviality of the Well and the extravagant identity transformations that occur there 'the hunger for community that has followed the disintegration of real communities around the world' (1991: 62). Even for this advocate of new communications technologies the concept of a real community regulates his understanding of new interactivity. While there may be some truth to a perspective that sees virtual communities as compensations for the loss of real communities, it is necessary to specify the new territory and define its possibilities.

Another aspect to understanding identity in virtual communities is discussed by Stone. Her studies of electronic communication systems suggest that the

code 'virtual' reality through categories of 'normal' reality. They do so by communicating to each other as if they were in physical common space, as if this space were inhabited by bodies, were mappable by Cartesian perspective, and by regarding the interactions as events, as fully significant for the participants' personal histories (Stone, 1992: 618). While treatment of new media by categories developed in relation to earlier ones is hardly new, in this case the overlap serves to draw closer together the two types of ontological status. Virtual communities derive some of their verisimilitude from being treated as if they were plain communities, allowing members to experience communications in cyberspace as if they were embodied social interactions. Just as virtual communities are understood as having the attributes of 'real' communities, so 'real' communities can be seen to depend on the imaginary: what makes a community vital to its members is their treatment of the communications as meaningful and important. Virtual and real communities mirror each other in chiasmic juxtaposition.

Narratives in Cyberspace

Electronic mail services and bulletin boards are inundated by stories. Individuals appear to enjoy relating narratives to those they have never met and probably never will meet. These narratives often seem to emerge directly from peoples' lives but many no doubt are inventions. The appeal is strong to tell one's tale to others, to many, many others. One observer suggests the novelty of the situation:

Technology is breaking down the notion of few-to-many communications. Some communicators will always be more powerful than others, but the big idea behind cyber- tales is that for the first time the many are talking to the many. Every day, those who can afford the computer equipment and the telephone bills can be their own producers, agents, editors and audiences. Their stories are becoming more and more idiosyncratic, interactive and individualistic, told in different forums to diverse audiences in different ways. (Katz, 1994)

The explosion of narrativity depends upon a technology that is unlike print and like the electronic media of the first age: it is cheap, flexible, readily available, quick. It combines the decentralized model of the telephone and its numerous 'producers' (messages with the broadcast model's advantage of numerous receivers. Audio (Internet Talk Radio) and video (the World-Wide Web using Mosaic) are being added to text, enhancing considerably the potentials of the new narratives. There is a 'World-Wide Web' which allows the simultaneous transmission of text, images and sound, providing hypertext links as well. The implications of the Web are profound: film clips and voice readings may be included in 'texts' and 'authors' indicate their links as 'texts'. In addition, other related technologies produce decentralizing effects. Such phenomena as 'desktop broadcasting', widespread use of camcorder 'reporting', and digital film-making are transgressing the constraints of broadcast oligopolies (*Mondo 2000*, 1993: 34 and 106).

The question of narrative position has been central to the discussion of postmodernity. Jean-François Lyotard has analyzed the change in narrative legitimation structures of the premodern, modern and postmodern epochs. Lyotard (1984) defines the postmodern as an 'incredulity' toward metanarratives, especially that of progress and its variants deriving from the Enlightenment. He advocates a turn to the 'little story' which validates difference, extols the 'unpresentable' and escapes the overbearing logic of instrumentality that derives from the metanarrative of progress. Any effort to relate second media age technologies with the concept of the postmodern must confront Lyotard's skepticism about technology. For Lyotard, it must be recalled, technology itself is fully complicit with *modern* narrativity. For example, he warns of the dangers of 'a generalized computerization of society' in which the availability of knowledge is politically dangerous:

The performativity of an utterance... increases proportionally to the amount of information about its referent one has at one's disposal. Thus the growth of power, and its self-legitimation, are now taking the route of data storage and accessibility, and the operativity of information. (Lyotard, 1984: 47)

Information technologies are thus complicit with new tendencies toward totalitarian control, not toward a decentralized, multiple 'little narrativity' of postmodern culture.

The question may be raised, then, of the narrative structure of second media age communications: does it or is it likely to promote the proliferation of little narratives or does it invigorate a developing authoritarian technocracy? Lyotard describes the narrative structure of tribal, premodern society as stories that first legitimate institutions, second contain many different forms of language, third are transmitted by multiple senders who are part of the narrative and have heard it before and listeners who are also possible senders, fourth construct a nonlinear temporality that foreshortens the distance between the past and the present, rendering each repetition of the story strangely concurrent and, most importantly, fifth authorize everyone as a narrator. Modern society, Lyotard argues, derives its legitimacy from narratives about science. Within science, language first does not legitimate institutions, second contains the single language form of demonstration, third does not confirm addressee as possible sender, fourth gains its authority by being reported, and fifth constructs 'diachronic' temporality. These contrasting characteristics may serve, as Lyotard wishes, to indicate the 'pragmatics' of language. It would be interesting to analyze the role of technologies in the premodern and modern cases, and especially the change, within the modern, from postmodern to postmodern media.

In any case, for Lyotard, the postmodern little narrative refunctions the premodern language game but only in limited ways. Like the tribal myths, the little narrative insists on 'the heteromorphous nature of language games' (1984: 46); it does not validate difference. Unlike older narrative forms, the little narrative suppresses the role of invention, the indication of the unknown and the unexpected. Lyotard points to certain developments in the natural sciences for his examples of such postmodern narratives, but we may turn to the Internet and to the developing technologies of

virtual reality. As we have seen, the Internet seems to encourage the proliferation of stories, local narratives without any totalizing gestures and it places senders and addressees in symmetrical relations. Moreover, these stories and their performance consolidate the 'social bond' of the Internet 'community', much like the premodern narrative. But invention is central to the Internet, especially in MUDs and virtual reality: the production of the unknown or paralogy, in Lyotard's term, is central to second media age communications. In particular the relation of the utterance to representation is not limited to denotation as in the modern language game of science, and indeed the technology encourages a lightening of the weight of the referent. This is an important basis for the instability of identity in electronic communications, leading to the insertion of the question of the subject and its construction. In this spirit, Katherine Hayles (1993a: 175) defines the 'revolutionary potential' of virtual reality as follows: 'to expose the presuppositions underlying the social formations of late capitalism and to open new fields of play where the dynamics have not yet rigidified and new kinds of moves are possible'.

For the new technologies install the 'interface', the face between the faces; the face that insists that we remember that we have 'faces', that we have sides that are present at the moment of utterance, that we are not present in any simple or immediate way. The interface has become critical to the success of the Internet. To attain wide appeal, the Internet must not simply be efficient, useful or entertaining: it must present itself in an agreeable manner. The enormous problem for interface design is the fear and hostility humans nourish toward machines and toward a dim recognition of a changing relation toward them, a sharing of space and an interdependence (Springer, 1991). The Internet interface must somehow appear 'transparent', that is to say, appear not to be an interface, not to come between two alien beings and also seem fascinating, announcing its novelty and encouraging an exploration of the difference of the machinic. The problem of the Internet then is not simply 'technological' but para-machinic: to construct a boundary between the human and the machinic that draws the human into the technology, transforming the technology into 'used equipment' and the human into a 'cyborg', into one meshing with machines.⁹

In Wim Wenders' recent film, *Until the End of the World*, (1991) several characters view their own dreams on videotape, becoming so absorbed in what they see that they forget to eat and sleep. The characters sit transfixed before their viewing devices, ignoring everyone around them, disregarding all relations and affairs. Limited to the microworld of their own dreams, the characters are lost in a narcissistic stupor. And yet their total absorption is compelling. Visual representations of the unconscious – no doubt Wenders has film itself in mind – are irresistible compared to everyday reality, a kind of hyperreality.

One can imagine that virtual reality devices will become as compelling as the dream scenes in Wenders' film. Virtual reality machines should be able to allow the participant to enter imagined worlds with convincing verisimilitude, releasing immense potentials for fantasy, self-discovery and self-construction. When groups of individuals are able to interact in the same virtual space the possibilities are even more difficult to conceive. One hesitates to suggest that these experiences are commensurate with something that has been termed community. Yet there is every reason to

think that virtual reality technologies will develop rapidly and will eventually enable participation through the Internet. Connected to one's home computer one will experience an audiovisual 'world' generated from a node somewhere in the Internet and this will include other participants in the same way that today one can communicate with others on bulletin boards in videotext. If such experiences become commonplace, just as viewing television is today, then surely reality will have been multiplied. The continued Western quest for making tools may at that point retrospectively be reinterpreted in relation to its culmination in virtual reality. From the club that extends and replaces the arm to virtual reality in cyberspace, technology has evolved to mime and to multiply, to multiplex and to improve upon the real.

Notes

- 1 See Agnew (1986) for an analysis of the formation of this subject position and its particular relation to the theater. Habermas (1989) offers a 'public sphere' of coffee houses, salons and other agora-like locations, as the arena of the modern subject, while Weber (1912) looks to Calvinist religion for the roots of the same phenomenon.
- 2 See, for example, the discussion of new 'interactive' technologies in the *New York Times* on 19 December 1993. In 'The Uncertain Promises of Interactivity', Calvin Sims traces future innovations to movies on demand, on-line information services, interactive shopping, 'participatory programming', video games and conferencing systems for business. It omits electronic mail and its possible expansion to sound and image in networked virtual reality systems.
- 3 I have not discussed the work of Marshall McLuhan simply for lack of space and because it is not as directly related to traditions of critical social theory as is Benjamin, Enzensberger's and Baudrillard's. Also of interest is Kittler (1990a, 1990b).
- 4 For an excellent essay on the economics of the Internet and its basic structural features see Hal Varian, 'Economic FAQs About the Internet', which is available on the Internet at listserv@essential.org (send message: subscribe tap-info [your name]).
- 5 See also the cautionary tone of Herbert Schiller (1993).
- 6 Many writers prefer the term 'artificial reality' precisely because they want to mark the difference between the privilege of real reality. Needless to say this substitution will not cure the problem.
- 7 I am indebted to Rob King for making me aware of this piece.
- 8 See also the response by Blanchot (1988).
- 9 Hayles (1993b: 69-91) interprets these 'different configurations of embodiment, technology and culture' through the binary pattern/randomness rather than presence/absence.

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