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The Information Superhighway and Post-modernity: the social promise and the social price

JANE KENWAY

ABSTRACT This paper is concerned with the social and cultural implications of converging technologies. It offers answers to questions about the implications for our quality of life, social justice and for politics in the context of post-modernity. Drawing together arguments from key commentators and critics from within and beyond cyberspace it identifies possibilities and potential dangers. The purpose of the paper is to assist educators to move beyond current instrumental perspectives.

Introduction

In developing an argument for systematic global analysis, Hennessy (1993, p. xvii) wrote it makes it possible to acknowledge the systematic operation of social totalities ... across a range of interrelated material practices. These totalities traverse and define many areas of the social formation—divisions of labour, dimensions of state intervention and civil rights, the mobility of sites for production and consumption, the reimagination of colonial conquest, and the colonisation of the imagination. (p. xvii)

Such a mode of analysis is sorely needed in education at the moment as studies of education have become increasingly fragmented and as the oversupply of micro-analyses hides from view a sense both of the big structuring forces at work and of their effects as they weave their way through everyday life. This is particularly the case in the educational research which focuses on new information and communications technologies—with some exceptions (for example, Cummins & Sayers, 1995). Here the emphasis is usually on such technologies as tools for learning or as a means of enhancement for more of the same. In such work there is usually a wilful blindness to the genuinely new and to the social and cultural contexts and implications of technology. However, technology is not just a resource for learning and we must also consider its significance as a context for learning (Bigum & Green, 1995). It is a context within and through which learning occurs and about which learning must occur. Given the implications of converging technologies for reshaping the lives of those in the so-called developed world and given their likely increasing importance for other parts of the globe, educators the world over have a responsibility to produce an agential citizenry which is well and critically informed about such technology's social and cultural implications. In particular, it is important to ask 'What are the quality of life and social justice issues which arise?' and 'What sort of politi will new technologies help bring into effect?' My intention in this article is to adopt the sort of analytic recommended by Hennessy (1993) in order to

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consider these questions in relation to the 'information superhighway'. These are difficult questions to answer given that the effects of technologies are notoriously difficult to predict and given the complexities of post-modernity. Nonetheless, it is important to try because, as I have argued elsewhere, they put new and profoundly difficult issues on the educational agenda (Kenway, 1995).

I will begin the paper with a brief description of the information superhighway, followed by an equally brief discussion of its social and cultural context. I will then canvas the views of those who have developed informed speculations about the social and cultural implications of the information superhighway and, in the process, add some thoughts of my own. The argument I will mount is that despite its promise and promises we need to remain open-minded as well as sceptical and critical.

The Information Superhighway

The information superhighway metaphor refers to the unstoppable trend to replace current technologies for the delivery of information, communication and entertainment with new. It is about a move from narrow band to broad band which provides the capacity to deliver much more volume, more quickly. It is also about digital encoding which brings about the convergence of computing, telecommunications and broadcasting into a common digital format. This means that voice, text, graphics and video signals can be mixed and manipulated. It also means the increasing convergence of the computing, telecommunications and broadcasting industries. The Internet, which links computers and telephones is the medium attracting most current interest.

The Internet is a network of computers which allows users access to databases worldwide. As we move from narrow to broad banding the quality and range of textual forms that the Internet provides access to will increase. However, there is more to the Internet than access to more and better information. It also offers a different economy of communication from other communications technologies. Until computer networks, these communication technologies fell into one or two categories: one to one (telegraph and telephone) and one to many (broadcasting—print, television, movies, and radio). Computer networks, on the other hand, offer many to many communication, multicasting in addition to one to one and one to many. The Internet, therefore, offers many different ways of communicating and, in short, it readily opens the way to membership of an array of new communities not grounded in local geography and makes it possible for people to become producers and distributors of their own cultural products. It is these changed relations of production and new opportunities for association that are seen to account for the Internet's tremendous popular appeal. The 1994 statistics indicate that there are 15 million users of the Internet and that this grows by 20–30% every quarter ('Internet to grow by becoming invisible', The Economist, reprinted in the Australian, 22 February 1994, p. 39). Indeed its rate of growth from January to July 1995 was 36% (survey data, July 1995, produced by Network Wizards, available on the Internet at http://www.nw.com/). Approximately 70% of connections to the Internet are from the USA, two-thirds of users are students, faculty, researchers or technical professionals and by far the largest group consists of 18–24 year old, male college and university students. It is difficult to gain access to figures about differential male and female usage but the estimates are that women constitute 10–15% but claims are that their numbers are rising rapidly. Of World Wide Web (WWW) users 15.5% are women, the median age is 29 years and the average age is 35 years.
At the same time as it is being constructed technologically, the information superhighway is being constructed discursively, with a range of very different values implied and interests at stake. Those who are constructing popular understandings tend to be advertisers and journalists and those vested interests whose perspectives they amplify. These mainly include representatives of the various industries involved, experts—usually from university research centres associated with science, technology and/or communications, enthusiasts and governments. The tendency amongst these groups is to celebrate and promote uncritically new communications media. The stress is on convenience, access, choice, enhancement and profit. Let us take some examples starting with the idea of the new networked home. Access from home is based upon new functions for a more extensively networked Internet and includes banking, paying bills, filling in forms and various sorts of home shopping. The latter include computerised catalogues with densely layered virtual shopping malls or with attractive video texts and payment from home possibilities. When the focus is entertainment the stress is on choice and interactivity. Multiple channel pay TV, video on demand and interactive TV are seen to open the opportunity for ‘entertainment democracy’. For business and industry, the new media forms are promoted as providing new opportunities for profit. The digital gold rush is under way for large and small businesses alike. When the focus moves to education the emphasis is on access to more and better information unrestricted by geography, institutional location or teachers and on new opportunities for global communication between students and between students, teachers and ‘experts’. Clearly, the information superhighway is a very successful and popular metaphor. However, those who regularly employ it say little about the direction and quality of its traffic, the difference activities in different lanes, who controls the lights or who gets to travel. Neither do they say much about the social and economic conditions which are helping to produce it or those which will result from it. Yet it would seem that new information and communications technologies are shaping up a new economic, social and cultural order and layering new inequalities over old.

Brand (1987, p. xiii) argued that ‘Communications media are so fundamental to society that when their structure changes, everything is affected.’ Most other analysts follow suit and the consensus amongst commentators is that these new media forms have the capacity to reshape our work, leisure, lifestyle, social relationships, national and cultural groupings and identities but in ways difficult but important to predict. For example, Poster (1994) claimed that as the new communications media which will arise as a result of convergence are so dramatically different from those preceding them, they represent a second media age and Drucker (1993) argued that the information or knowledge economy is the major economy of today and the future. Many on- and off-line cultural, social and educational analysts are currently exploring the implications of new communications media for various aspects of our lives. In order to get a sense of the complexity of what is afoot it is useful to canvass their ideas.

Social and cultural theorists tend to place recent developments in information and communication technologies, such as the information superhighway, in the context of discussions of the massive changes associated with what is variously called post-modernity, the post-industrial age, post-Fordism, post-nationalism, new times, globalisation, the information age, latecapitalism, disorganised capitalism, casino capitalism and so on. Whatever their title, their stories are of dramatic irreversible, life altering, unpredictable change.
This range of titles suggests a number of things. Firstly, it suggests that we are going through a historical period which has certain features which distinguish it from previous times and that fundamental social conditions have radically changed. Secondly, the range of titles suggests differences of focus and emphasis, but it also points to some serious interpretive disagreement about the nature of the times we are going through. In turn, this implies that adequately coming to grips with these times is no easy analytical task. Much analysis is therefore a necessarily speculative and tentative exercise in seeking to understand this new context. However, all analysts, from whatever broad theoretical orientation, seem to agree that to understand these times it is necessary to adopt a global analytic and one which takes into account the relationship between capitalism and new technologies. Such an analytic recognises that computer technology has 'intensified multinational capital's reach', provided it with a 'dense grid of information' and 'proliferated opportunities for investment and exploitation' (Hennessy, 1993, p. 15). To put it very simply, markets and information technology and the relationship between them are the primary forces driving economic, social and cultural change today. It is thus insufficient to talk either of the dominance and force of consumer culture or of technoculture. Our global, regional, national and local cultures and the identities they construct must be seen, in large part, although not exclusively, as the complex and shifting result of both as one. This point is eloquently demonstrated in the words of Rundle (1992):

We live in the world of the office, the computer network, the outer suburb, satellite TV, the multi campus university. These are the outer signs of a global system which has been consolidated in recent decades by the fusion of science, the state and the market, by the development of the information society, by the growth of consumer capitalism and by the development of new systems of value and meaning. (p. 3)

The contemporary period ... is one in which the vastly speeded up and globalised system of information and production has produced a culture, a psychology and a system of values appropriate to it. Practically everyone ... is, to a greater or lesser degree, caught up in this culture, from the young urban professional in the thick of the information lifestyle leisure culture, to the inhabitant of the outer suburb (who shops at a mall, gets 24 hour world TV, whose children are learning computers and Japanese) to the farmer watching satellite TV in the pub or contemplating the pros and cons of various genetically engineered species of wheat and all points in between.

Global markets and global technologies have significant implications for nation-states, for the power of policy to effect change justly and, indeed, for the inclination of policy makers to attempt such change. New technologies interact with economic matters to help facilitate transnational enterprises, the operations of which challenge the capacity of nation-states to control their own economies and cultural and natural environments. Indeed, new technologies of communication and the markets they support often bypass state boundaries altogether as electrons pass through national borders at will. The state thus attempts to steer but is also to some extent steered by the cultural and economic logic of these new media forms. Nowhere is this more evident than in relation to international money markets which are characterised by 'footloose capital' and shifting global economic landscapes (Wheelright, 1994, p. 26). As Wheelwright (1994) noted, four principles prevail in the supranational corporate culture. These are 'think globally, act short-term, move money and buy and sell other corporations'.

These changes undermine the power of the nation-state to control its subjects and their
form of life. The nation-state, therefore, seeks out new ways to survive in times which threaten its annihilation. These are often very destructive and exploitative (see Levidow, 1990). As states struggle to transform their national economies and as they direct their resources accordingly, what we see are a shedding of welfare responsibilities, rapid privatisation, the rise of market forms in the remaining state-provided services and the development of new government and market technologies of ideological manipulation and control. As Dion, (1995) said of the USA case:

The current task for the public relations workers at transnational corporations and their governmental allies has been how to recover the iconography of the American Dream as a positivity in a time of dislocation and disaccumulation. Specifically, they cultivate and circulate a claim that transborder informational and production practices do not represent the death of the American Dream. In the amended account, the American Dream is resurrected, phoenix-like, in the promised embodiment of a postindustrial, information-driven, 'next generation' form. In doing this, they refurbish the powerful and recurrent American ideology of techno-utopianism.

The Information Superhighway and Post-modernity: social and cultural implications

It is not uncommon for governments to express concern about the implications of the information superhighway for social inequality and justice. The slogan for expressing this concern is 'information rich and information poor'. This slogan raises the questions 'Will converging technologies create new social divisions in terms of "information poor" and thus layer over current social inequalities another layer of inequality?' and 'How can this be prevented?' Seldom do such concerns translate into either an adequate understanding or enlightened social policy. This is no surprise, governments being what they are. But, to be fair, reaching an adequate understanding is no easy matter given the complex processes involved and the proliferation of both Utopian and dystopian narratives about communications technologies and their economic, social, cultural and political implications. Let me try to bring some clarity to the field by pointing to the main threads of both perspectives.

Utopian perspectives

Some usually astute observers, among them Internet Society President Vinton Cerf and Microsoft CEO Bill Gates, are predicting that the twenty million now on the Net is only the beginning. Cerf predicts 100 million by 1998 and Gates, in a recent interview, confided that his big mistake so far had been in underestimating the importance of the Internet. If they are right, if the hordes are going to start beating their drums in public, absolutely everything about the existing social order is about to be challenged. Not simply the mass media institutions, but all institutions. Everything is at stake. (Weston, 1994)

Most Utopian arguments focus on the Internet and on developments associated with it. Basic to them all is the fact that the Internet has a fundamentally different economy of communication from other forms of communication technology. As I noted at the outset it allows multicasting or many to many communication. And, so the argument goes, the Internet offers people the opportunity of becoming producers and distributors of their own cultural products, rather than active or passive consumers of the products of others. As Weston (1994) pointed out, 'the mouse is more powerful than the remote control'. He
argued ‘It is impossible to understand much about the Internet’s appeal by analysing its content. The Internet is mostly about people finding their voice, speaking for themselves in a public way’ (Weston, 1994). In this view the Internet is less about content and information and more about new relationships to content and information. The mass media is seen as offering ‘almost pure content’ and a non-dialogical relationship that insulates the few content producers from their audiences. In Weston’s (1994) view the Internet expands ‘the locus of direct, self-mediated, daily political involvement’. Cultural producers of all sorts no longer have to kowtow before mass media agencies in order to gain a public voice. And, ‘what was previously local, domestic, idiosyncratic and private can, for the first time, become external and public. This is an abrupt reversal of the mass media’s progressive appropriation of the idiosyncratic and private for their own institutional purposes.’

There are many implications here for those from subordinated groups who wish to rewrite their identities—always providing of course that such groups can get access to the new means of cultural production and have the skills necessary to use them. The Internet provides them with new opportunities to represent themselves in their own voices and own ways. This allows them to move beyond the constraining and often demeaning constructions of them produced by the mass media. It also allows them to move beyond the gendered, racialised and classed barriers often put in their way by those who control publication outlets and makes possible an outpouring of art, literature and music from subordinate groupings. In turn, this has implications for the notions of expert and novice, high and low culture—nations which have often positioned the socially subordinate on the down-side of the divide.

Some argue that this capacity provides a direct challenge to the mass media and the established institutional order which it supports—that the more public expression becomes distributed the more the institutions of modern society will be inconvenienced, destabilised and even threatened. Certainly digitised information has the capacity to subvert a market economy because it challenges fundamentally the nature of property and ownership. Challenges to the notion of property and ownership have important implications for the socially dispossessed who have often been viewed as property and are not to be the property holders.

Taking a somewhat different tack, some argue that the Internet not only provides people with a different relationship to cultural production but that it provokes a more democratic polity and offers new models of social and economic organisation. Kapor (1993, reference not given) represented this point of view rather romantically perhaps, when he said

The crucial political question is ‘Who controls the switches?’ … Users may have indirect or limited control over when, what, why and from whom they get information and to whom they send it. This is the broadcast model today and it seems to breed consumerism, passivity, crassness and mediocrity. Or, users may have decentralised, distributed, direct control over when, why and with whom they exchange information. That’s the Internet model today and it seems to breed critical thinking, activism, democracy and quality.

Certainly, some of the metaphors of the Internet promise new ways and opportunities for relating and for the formation of identity. One metaphor is networking and the discourses within it include interactivity, interconnectedness, multidirectionality, flow and seamlessness. Fans of the Internet are particularly fond of the network metaphor (the WWW) is one of the main systems on the Internet). To them it represents a new, non-hierarchical, democratic and reciprocal model of human relationships in which there are multiple and shifting centres, there is no obvious framework of constraint and in which the individual is the author of meaning. Indeed, as Burstein & Kline (1995, p. 104) pointed out the lexicon associated with the Internet includes such concepts as free, egalitarian, decentralised, ad hoc, open and peer
to peer, experimental autonomous and anarchic. In contrast, the concepts associated with business and commerce are for profit, hierarchical, systematised, planned, proprietary, pragmatic, accountable and reliable.

As many argue, distributed public media require the renegotiation of the rights and freedom associated with public self-expression. They also require the renegotiation of issues associated with assembly and privacy. There is a well promoted view on the Internet that these issues will be worked out in community networks of various sorts and that community networks have particular implications for social justice. According to this view, the Internet provides opportunities not only for building new communities, but for renegotiating the rules of social life and for provoking a more democratic polity (Reingold, 1994). Agre (1995) went so far as to argue that as the collective life of the Internet community has unfolded, the politics of social life are being renegotiated:

Concepts of identity, civility, and community were suddenly transformed beyond recognition—and not just in a theoretical way, but in a way that the system maintainers and the users themselves had to work with daily. System maintainers have been, in many ways, rediscovering the basics of democracy as they negotiate the social contract that balances individual freedom and social harmony while confronting a whole range of social distinctions and divisions.

Community is a key concept. Virtual communities build up quickly around shared interests such as science fiction or film criticism or health support (Fox, 1996). This community metaphor is often extended to suggest a global commons. While it is far-fetched to talk of the Internet as a community rather than a collection of disparate communities and while it certainly is not global in the true sense of the word, the Internet does accommodate many different sets of interests and some believe that there is at least a community ethic or 'Netiquette' that pervades the Internet; the popular concept here is ‘information wants to be free’. As Sobchak (1994) pointed out, there are shades of neo-libertarian individualism here. Nonetheless, rebuilding a community and renegotiating the rules of social life are attractive propositions for those who have been alienated and disadvantaged by the current rules. Turkle (1995, p. 239) drew on her studies of Internet participation to argue that downwardly mobile young middle class people in the USA are using MUDS (Multiple User Dungeons, text-based virtual reality) as 'a vehicle for virtual social mobility', feeling that as 'they have no political voice they look to cyberspace to help them find one' (Turkle, 1995, p. 241).

Others see political opportunities in the possible anonymity of the Internet and the fluid identity games people can and often do play on it which allow a great deal of 'gender bending' and 'cross-dressing'. People can live parallel lives, use nicknames or false names, conceal their identity and have multiple identities—including multiple gender and sexual identities. This is a matter of fascination for some scholars who are interested in exploring the construction of humanity, gender, sexuality and the reconstituted subject in cyberspace and there is some intriguing literature on this topic (see Hayles (1993), Morse (1994) and particularly Turkle (1995) for some empirical studies of 'life on the screen'). Stone (1995), a leading theoretician of identity/bodies/machines explored this issue through some telling tales of the Nets which make problematic the notion of identity itself. The suggestion is not that there is no identity 'masked under the virtual persona', but rather that the disembodiment of the Internet allows repressed and multiple persona to come into play and that it encourages a 'radical rewriting ... of the bounded individual as the standard social unit and validated social actant' (Stone, 1995, p. 43) and indeed challenges much psychoanalytic theory. As Stone (1995) said, networks are social environments where

Some of the interactions are racially differentiated and gendered, stereotypical and
Cartesian, reifying old power differentials whose workings are familiar and whose effects are understood. But some of the interactions are novel, strange, perhaps transformative, and certainly disruptive of many traditional attempts at categorisation. (p. 36)

Disembodiment allows much to happen that otherwise may not. As Stone (1995, p. 36) suggested ‘new collective structures (are) risking themselves in novel conditions’ and as Turkle (1995, p. 214) said, drawing on her empirical studies of gender bending on the Internet, ‘MUDS are proving grounds for an action-based philosophical practice that can serve as a form of consciousness raising about gender issues’. The broad point to be made is that Internet communities and identities have the potential to provoke a new critical discourse about the ‘real’.

There are many Internet activists who claim that the easy replication and distribution of digitised information provides a powerful resource for social justice activism. They see this technology as providing unprecedented opportunities both for resistance to forces of dominance and for the development of alliances across differences. There are many examples of this but here I will refer to the Human Rights Gopher set up in February 1995. As the promotion on the Internet points out:

In an effort to increase access to human rights information, seven human rights monitoring organizations have begun to centralize their material on the Internet. Amnesty International (AI), Committee to Protect Journalists (CPJ), Human Rights in China (HRIC), Human Rights Watch (HRW), Lawyers Committee for Human Rights, PEN, and Physicians for Human Rights (PHR) have created a “Human Rights Gopher”. ... The human rights organizations hope to broaden the distribution of their information and speed up their ability to communicate ... Internet users will be able to read and download the text of action alerts press releases, executive summaries of reports, letters to government officials, newsletters, and select reports the same day that they are issued ...

NEWNIRL%ITOCSIVM.BITNET @vm.cnuce.cnr.it

In Turkle’s view, ‘the Internet carries a political message about the importance of direct, immediate action and interest-group mobilisation. It is the symbol and tool of a postmodern politics’ (Turkle, 1995, p. 243).

Dystopian perspectives

Dystopian themes largely emphasis the ‘informatics of domination’ (Haraway, 1987). A panopticon and surveillance theme is common and relates to the growth of sophisticated watching, listening, storing, sifting and intrusive devices and to the eventual capacity of full service networks to track the behaviour of individuals and to develop digital profiles for various state or market purposes (Ratcliffe, 1994). Chaum (in Levy, 1994) calls this a ‘panopticon nightmare’ saying ‘Everything you do could be known to anyone else, could be recorded forever. It's antithetical to the basic principle underlying the mechanisms of democracy.’ Let us take two examples. Interactive digital marketing (targeted or customised marketing based on digitised, cross-indexed advertising and databases on consumption habits) has potentially insidious effects which are not just about privacy and fair play but also about manipulation. The more you buy the more you give away about your personal preferences and yourself and thus the easier it becomes to sell to you. A key question here is ‘How will the differences between the classes, races, ages and sexes be manipulated and with what effects?’ Both within and outside the USA fears abound about digital ‘wire tapping’ by
government and law enforcement agencies, particularly the CIA and FBI. The use of 'intelligent agents' capable of surveillance is likely to lead to the forms of self-surveillance of which Foucault talks.

Matters of national sovereignty and security are pertinent here. But the matter does not stop there for as Poster (1994, p. 78) observed 'nation states are at a loss when faced by a global communications network'. Their 'institutions, laws and habits' were developed for another media age. The Internet, for instance, pays no attention to national boundaries and it is not subject to government regulations. Governments are not only at a loss about how to deal with privacy and surveillance issues but also with matters of regulation, property rights, copyright, export laws, defamation and much more. Other government worries relate to questions of national identity. This issue is of particular pertinence to countries outside the USA and is expressed in concerns about cultural deregulation, further Americanisation and the implications these will have for an individual country's unique cultural identity and for its culture industries and their export potential. The USA's cultural imperialism and its ambition now to be the information and entertainment superpower through the export of digital goods and services would seem to justify these concerns. Invented to point to the problem of access, when inverted the 'information rich/information poor' slogan points to the problem of being 'rich in poor information' and encompasses enduring social and gender justice questions about 'access to what?' What will the quality and nature of the content and interactions be and how will social relationships and individual and group identities be constructed within them? What sorts of knowledge is offered? Whose knowledge is it and what does it say to users about who they are, how they should behave and what they should value?

Cross-national issues arise here too with regard to cross-cultural sensitivity, rights and responsibilities on the Internet. For example, what is considered perfectly acceptable in one country may be considered deeply offensive in another. No less sensitive are cross-cultural differences associated with matters of authorship and ownership.

A further concern relates to the implications of the commercialisation of the Internet for its proclaimed current democratic practices and communities. It is clear that the information superhighway is being seen by business more as the marketing superhighway and as a result the fear is that the inclusionary ideals and vocabulary of the Internet cannot be sustained now that markets have recognised its immense potential. But of course there are wider implications.

The rise of the market on the Internet combined with the technologies of surveillance noted above raises serious issues about the further commodification of people's lives. The principal battle field of the technology war is the home or more specifically the integrated telephone, computer and TV within the home. Networked homes have the capacity to undermine the industrial conditions of workers, to reinscribe the traditional version of femininity and overall to create new pressures on households. It is likely that the networked home will increasingly become the networked workplace. Already telecommuting is dramatically changing the nature of work and particularly homework. According to Burstein & Kline (1995, p. 262), in the USA, 7 million people work for their employer from home, 20 million are involved in home-based business and up to 40 million do at least some of their work from home. While all of these may not necessarily be involved in networked work, there is no doubt that the home is where secondary or peripheral labour markets flourish and where, for women, paid work is conducted at the same time as unpaid household and child care work. Further, 'new communications tools add time pressure, stress, and complexity to people's lives as home and work and work and leisure become increasingly difficult to distinguish' (Burstein & Kline, 1995, p. 263).
Other issues arise with regard to the further commodification of people's lives as a result of the networked home and the provision of infinitely more accessible home services. Home shopping with its ever-changing flow of seductive commodities and images is likely to position women even more as subjects for the endless array of gendered images and identities offered by the advertising industry which will extend its reach into more and more aspects of life. While it may offer convenience it will also privatise and individualise consumers and further lock them into market forms of exchange and the social relationships which accompany them. Markets require a shift in focus from the collective and the community to the individual and redefine the meaning of such terms as rights, citizenship and democracy. Civil and welfare rights and civic responsibility give way to market rights in consumer democracy. The decline of the welfare state is what accompanies the rise of market forms. This next stage in the development of technologised consumer culture does not auger well for those who depend on welfare or for those who need unions to help them to gain some rights as outworkers. Neither does the rise of the amoral, selfish, anarchic individualism produced by an increasingly consumption-driven economy.

Many fears have been expressed about the psychological fallout of the information superhighway—that it will breed a cop-out society by feeding fantasy, escapism and nostalgia. Media critic, Postman (1986, 1993) argued that the information superhighway is unnecessary because we already have an overabundance of information. He wrote about the loss of meaning and the trivialisation associated with the media age, the feelings of alienation, confusion and inertia that it produces, information glut and information junkies. Apparently some players of MUDS play for up to 40 hours a week, have trouble slipping back into real life and 'pinch time from work ...and sleep' (Stewart, 1994, p. 11). In Postman's view, as the home increasingly becomes the site for accessing shopping, entertainment and work, 'co-concooned and isolated individuals will be produced who find it difficult to distinguish between reality and simulation' (cited in Stewart, 1994, p. 11). The possibility of alienation from public life looms large here and with it questions arise about community and social responsibility in real life as well as life on the screen. However, again, there are other further issues worth canvassing.

New mass media forms in the 'networked home' raise important issues about identity, gender and household leisure. For some time analysts from cultural studies have speculated about the implications for the constitution of the identity of a televsional lifestyle about the subjective implications of the fragmentary, superficial, hyperactive and impressionistic offerings of the TV screen. Some express concern that these will have negative implications for the ways in which viewers come to experience and understand the world and that the problems will be magnified in the more complex and confusing environment of the converged technologies. Further matters of concern arise in relation to the individually tailored information processing programme (intelligent agents) which are likely to be developed to assist people to handle the information surplus. In contrast, these will block out the benefits of the haphazard and serendipitous and lock people into their own limitations. To take another tack, pay TV, with its popular sports and pornography channels, is unlikely to rewrite masculinity in a positive way. Indeed, as many feminists have argued, sport and pornography are prime sites for the construction of aggressive and oppressive forms of masculinity. Video games, both those in arcades and homes, are renowned for their violence and broad banding will add considerably to the availability of such games and to opportunities for interactive violence. How boys construct their masculinity through these games is a matter of concern. In an attempt to lure girls into the market, creators have produced games around such toy characters as 'Barbie' and the 'Little Mermaid'. The demography of the Internet points to its main participants as young, White, well-educated US males. Indeed, the most common
feminist line of argument about the Internet is that it is an outcome and expression of male culture. However, as I have argued elsewhere (Kenway, 1996) the gender issues are more complicated than that.

Of course many of the benefits and the problems alluded to so far have implications mainly for those with access to these new media forms. In order to get these debates into perspective, it should be remembered that this constitutes a privileged minority of the world's population. In the USA for example, only the affluent third of the population own a home computer and, according to the Australian Bureau of Statistics in Australia 1994, only 20% of households owned a home computer. Further, there are approximately seven million households in the USA without a telephone. Access in the USA invariably ‘breaks down along traditional class lines’ as Turkle (1995, p. 244) said and she went on rather chillingly to speculate that ‘Perhaps people are being even more excluded from participation, privilege and responsibility in the information society than they have been from the dominant groups in the past’. In the so-called Third World, it is probable that many of the population have never made a phone call.

Access is a baseline issue and includes matters of cost, availability and competence and indeed the quality of access. As Holderness (1994, p. 24) pointed out, there is high- and low-end Internet access and this can mean significant differences in what it is possible to do, for example ‘down loading a book in a couple of seconds’ compared to spending ‘all day running up bills to do the same’. He went on to explain that the costs in certain countries of the world in relation to income are prohibitive and that in the less-developed countries the capital is not there to purchase or attract (depending on which way you look at it) such ‘capital intensive goods and services’ and that therefore some countries are unlikely to gain Internet access and the developments which will flow from it. The path from having no access to having a computer, a modem, advanced communications software, an online service account and the knowledge necessary to use them all is not likely to be travelled easily by the information poor. Matters of language (most Internet communication is in English), poverty, social and geographic isolation, disability, gender, generation, and First and Third World/North and South location as they overlap and intersect are particularly pertinent here.

This points to the limitations of any mode of analysis which does not attend to broader patterns of production and consumption and clearly one must also consider the implications of new information and communications media for such broader patterns.

The Bigger Picture—again

There can be little doubt that new technologies are helping to bring into effect a new economic order, call it what you will. Burstein & Kline (1995) observed that this involves a shift from brawn to brain power, from manufacturing to services, from main-frame to micro processor, and from big smoke-stack belching heavy industries, vertically integrated under hierarchical management structures to the lighter, cleaner, more decentralised technology industries, horizontally networked into matrices of ‘virtual organisations’. (p. 10)

All this connects to major trends in business and government organisation where decentralising, downsizing, outsourcing and customising have become the dominant discourses while at the same time new communications technologies offer new management technologies of control. The feature of these changes which is most pertinent here is the rise of what has
come to be called the knowledge or information economy and the rise of the knowledge worker (Drucker, 1995).

These times have seen the decline of manufacturing, the expansion of the service sector and the birth of the information sector which is of increasing importance as a source of output, growth and wealth creation. Moving ‘bits rather than atoms’ (Negroponte, 1995, *passim*) costs much less and therefore this represents the highest value-added sector. The talk in this sector is less of human capital and more of intellectual capital (Burstein & Kline, 1995, p. 274). What is needed here is people’s knowledge and creativity with regard to applications and content, their capacity to manipulate, understand and make productive (commercial, exportable, transferable and licensable) use of symbols for the abstracted worlds of information, finance, content and entertainment. According to Burstein & Kline, (1995, p. 334) such symbolic analysts constitute 20% of those involved in the information sector.

They are the glitterati set of the digerati set and they are led by the men at the electronic frontier—the digital entrepreneurs. Clearly these men hold many of the current leavers of cultural and economic production. Rushkoff (1994) implied this is ‘the revenge of the nerds’. They lead what Kroker & Weinstein (1994) called the new virtual class. In an era when all things digital capture increasing media coverage, their corporate battles and values have a particularly high profile and are constantly offered to us by the press as models of entrepreneurial inspiration. For such digital entrepreneurs particularly in the USA, Europe and Japan and to a lesser extent in other parts of Asia, Latin America, Canada and Australia all the world is a potential source of labour, custom and profit. They are creating a new digital world order based on information flows. As Hennessy (1993) pointed out,

As the terms of economic power veer more and more towards control over information, knowledge is being stripped of its traditional value as product of the mind, making it a commodity in its own right whose exchange and circulation helps multiply new divisions of Labor and fractured identities. Politically, ‘the ruling class’ is being reconfigured as a conglomerate of corporate leaders, high level administrators and heads of professional organisations. An accompanying reinscription of the bourgeois ‘self’ as a more complex and mobile subjectivity inextricably bound up in myriad circuits of communication is unfolding in multiple cultural registers. (p. 10)

Sassen (1991) used the network metaphor to point to the decentralisation of production and the continued central ownership and control in what she calls global cities. In these global cities, the banking, accounting, law and other services are provided to enable ‘complex organisations to manage spatially dispersed networks of factories, offices and services’. Further, as (Probert, 1993, p. 20) pointed out, drawing from Reich, the ‘enterprise web’ is a more apt metaphor, as ‘the centre provides the strategic insight that binds the threads together. The threads of the global web are computers, facsimile machines, satellites, high resolution monitors and models.’ As she observed,

producer services involve significant numbers of high wage professionals and technical employees, but even greater numbers of low wage clerical workers, usually women, and nothing much in between ... the increase in low wage jobs and casual employment is linked with the growth of the knowledge industries, the growth of high income professional jobs and the resulting gentrification of global cities. (Probert, 1993, p. 20)

This class, she explained, has a lifestyle which has moved away from the consumption of mass-produced goods to the consumption of leisure and craft goods and these both employ labour which tends to be sweated work and outwork and involves a vast increase in part-time and casual work.
New technologies have many other implications for patterns of employment and class and other relations of inequality:

Computer technology has ... speeding up shifts in production and refining divisions of labour. The accompanying fragmentation and dislocation of communities and the increasingly anonymous corporate structure have made the operations of exploitation in the age of information ever more insidious even as inequalities between women and men, minorities and dominant racial and ethnic groups have intensified. (Hennessy, 1993, p. 10)

The digital revolution has contributed to the high degree of redundancy and job obsolescence in the manufacturing and increasingly in the service sector, to the decline of middle management and the middle classes, to mass and ongoing unemployment and to the rise of a permanent underclass. The information revolution makes promises about social and cultural riches and opportunities. However, it can only keep these promises to a fortunate few. For many it spells disaster. And, for global and national societies as a whole, it points the way to dangerous economic and social polarisation and accelerating disenfranchisement of major sections of the population.

These are but some of many arguments about the ways in which new communications technologies contribute to the stratification of the workforce. The easy movement of information across dispersed locations and communities also allows for 'remote management' and for the dispersal of production across the globe. As Burstein & Kline (1995) pointed out.

the division of labour in creating information products and services is constantly changing and highly flexible. High speed communication links make it possible to shift data entry work and laborious computer coding to many sites around the world. 'Back offices' ... are moving to Ireland, Jamaica, China, the Phillipines and India. (p. 308)

Simply put, 'Jobs in the productive sector are down loaded around the globe' (Kroker & Weinstein, 1994, p. 86). Kroker & Weinstein (1994) argued that arranging free trade zones such as the North American Free Trade Agreement (NAFTA) and the European Community or most favoured nation status free up the speed of the virtual economy from the gravitational pressure of local regulatory 'circuit breakers' and allow for the 'endless repositioning of manufacturing nearest to the cheapest sources of labour'. No longer is labour value in search for a market ...now a virtualised market for coordinating global market positioning is in search of stay-at-home labour. (p. 79)

In turn, this sort of thing allows for new international divisions of labour which intensify the control of workers at the same time as wage competition is increased.

While the digital entrepreneurs may well be creating a new digital world order and new capital formations, many of the conventional laws of capitalism remain. Capital will flow where it can productively find new business and build new markets and parts of the so-called less-developed world are seen as a vast emerging market for new telecommunications services. Indeed, telephony is regarded as one of the biggest worldwide growth businesses. Apparently personal computer ownership doubles every 2 years in China (Burstein & Kline, 1995, p. 297) and Singapore is pumping money into becoming a 'wired island', 'middle-office', connecting the corporate North to its manufacturing plants in the less-developed South (Holderness, 1994, p. 24). For the moment though, according to Bukstein & Kline (1995, p. 308), in the emerging markets of Mexico, Brazil, Indonesia and China it is the local élites who are providing the markets for such things as satellite dishes, cellular phones and
cable TV. The rich in these high-growth emerging markets are using digital technology to maintain their class location and the poorer are becoming poorer as a result of their additional information poverty. Of course, despite what the digital entrepreneurs may say, getting 'wired' is not going to solve basic problems associated with economics or education in the poverty-stricken households of those who Negroponte calls the 'digitally homeless'.

Of life on-line, Turkle (1995) said

The issues raised are difficult and painful because they strike at the heart of our most complex and intransigent social problems: problems of community, identity, governance, equity and values. There is no simple good or bad news. (p. 232)

Her remarks are apt for the off-line world as well. Predictably what will happen on and around the information superhighway will be a complex interplay between the Utopian/dystopian themes I have outlined and probably much more besides.

**Conclusion**

Given that technological competence is a new basic of education, equal access and equal competence must be a basic concern for educators. Such competence will have an impact on students' quality of education and their access to jobs and retraining, to government information and to learning about critical issues which affect their lives. A consideration of the manner in which all basic needs can be met is crucial. However, as I have shown, it is commonly expected that as new technologies converge and the information superhighway develops, they will have an ever-increasing impact on our work, leisure, health, lifestyles and national and cultural identities and social relationships. Nonetheless, little educational attention is being paid to the manner in which we produce and consume such technologies and to associated issues of politics and justice. We must encourage students to consider the social and cultural issues that are implicated in these possible transformations to the ways in which we 'live, work and play'. Be it in the workplace, the home or elsewhere, students need to be in a position to assess the costs and benefits of the new communications media and to make wise choices which maximise the economic, social and cultural benefits and minimise the risks and costs. Teaching students about technology is just as important as teaching them to use it. For, in the words of Mitch Kapor from the Electronic Frontier Foundation

We are not just consumers, we are also citizens. With all this talk about markets and profits in the new digital world-order perhaps it's time to start thinking about what kind of world we want it to be. (Burstein & Kline, 1995, p. 17).

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(Note: articles published on the Internet do not have page numbers.)


The Information Superhighway and Post-modernity

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