Computers in Education: Critically Reconstructing the Technophilic and Technophobic Ideological Divide

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> The incipient technophobe will rage against the motor-murder of 20 people a day in Britain, without once considering that cars also carry 50 million people and their goods.
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> - New Statesman (Aug 27, 1965): 286/1.

> This commonplace is really very common among technicians, technologists, technolasters, technophagi, technophiles, technocrats, [etc.]
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> - H. Weaver (tr.), Ellul's Critique of Commonplaces, 1968.

As the new technologies associated with personal computers have proliferated over the last few decades, along with the emergence of a communications infrastructure designed to allow these computers to support a global network of information and cultural exchange, the resulting Internet has evolved to become an important commercial and non-commercial aspect of everyday life all over the world. While higher education was from the first involved in the development of this process, academics being crucial to the development of the original Arpanet in the 1960's and 1970's (Kahn 2004), it wasn't until the rise of the World Wide Web (in 1991) and the popularization of the Internet throughout the 1990's that the educative potential of computers was truly revealed.

While the basic positions behind the technophilia/technophobia debate arguably run as far back as the origins of modernity itself, one can clearly outline and identify technophilic (e.g. Marx, Marinetti) and technophobic (e.g. M. Shelley, Thoreau) related

positions running alongside the evolution of the industrial revolution. But it was in the 1960's only that the two terms appear to have come into actual parlance. Technophiles rejoiced in McLuhan's Understanding Media (1964), as they awaited Kennedy's promised moonshot, and technophobes meanwhile latched onto Marcuse's One-Dimensional Man (1964) and began to move to Big Sur and Woodstock. In fact, both of these thinkers held, and went on to articulate, more dialectical views of technology and human freedom, but the casual reader of the time could hardly help but be swept up in McLuhan's narrative of the coming of the cool electronic age of multimedia or in Marcuse's damning dystopian critique of a wholly technocratic society that sought to pave-over the dream of liberation. Then, of course, though the public could hardly have known it, the Internet was slowly beginning in UCLA laboratories, Bill Gates was beginning to fiddle with computers (Gates 1996a), even as aspects of the environmental movement (amongst others) were coalescing into a political force that stood to challenge a processor-laden, motorized society.

By the time Gates had moved from teen hacker to adult emperor of Microsoft in the 1990's, however, the technophilia/technophobia debate was primed for a major resurrection and it went on to set the tone throughout the decade. In part this resulted as a result of an exciting new form of tech-inspired literature known as Cyberpunk. Its chief author, William Gibson, managed to instill in the genre an appeal to both sides of technology debate by portraying a future-present in which hegemonic transnational corporate powers battle for world control through sophisticated virtual networks of information (i.e. cyberspace) and individual hacker rogues attempt to subvert that space for their own ends amidst a sprawling techno-urban dystopia surrounded by endless desert. Central to Gibson's narrative were "wild west" metaphors that served to enrich a reality with

gunslinger macho and cowboy romance (Gibson 1984) that, at that time, was largely populated by geeks and nerds. John Perry Barlow (1996) and Howard Rheingold (2000) likewise re-invigorated the "frontier" metaphor, thereby evoking a wide-open Star Trek futurism with Fredrick Jackson Turner's own conflation of democracy, individualism, and the imperialistic American imaginary of a century earlier (Turner 1972).

In major technophilic journals like Wired and Byte, "digerati" like Kevin Kelley (1995) and Nicholas Negroponte (1995) promoted computer and information technology as providing benefits such as the empowerment of disenfranchised peoples, telemedicine, the re-invigoration of community, the increase in worker productivity and leisure pleasure, and the proliferation of information resulting in the democratization of education. Essentially free-marketers imbued with a sort of New Age faith in technological determinism, such technophiles seemed to lack "any sense of social or political consciousness or moral concern about the directions of the global economy and the explosion of new technologies" (Best & Kellner 2001). Gates himself boiled the technophilic optimism of the era down to its essence when he prophesied that the growth of the computers throughout society would change "the way we learn, the way we elect politicians, the way we spend money, even the way we entertain ourselves, is destined to change, and on the whole in a very, very positive way" (Gates 1996b).

In opposition stood the technophobes, which in fact is an unfortunately loose category that included both anti-technology figures like Ted Kaczynski (1995), Jerry Mander (1992), and John Zerzan (1994), as well as so-called "neo-luddites" like Theodore Rozack (1994), Kirkpatrick Sale (1995), and Neil Postman (1993) that favored technology as an expression of humanist potentials, but not as a systemic force that they felt tends to

dominate, totalize, and otherwise oppress what is best in humanity. Regardless, all to one degree or another moved in the direction of suggesting some of the following critiques of computer and information technologies: that they are corporate interests designed to entrench corporate interest, that they replace mind with information transfer, that they lead to a divorce from community and nature and also destroy these actively, that they foster race, class, gender, and international inequalities, and that they are culturally imperialist tools.

In Education

There are a number of arguments for involving computers in contemporary education, some of which are downright sensible, others that are fanciful, and still others that are questionable.

One of the more sensible arguments comes out of Douglas Kellner's critical theory of technology and his call for multiple literacies (Kellner 2002), in which he points out that computers today are becoming the dominant tool behind much social communication and representation and so the nature of literacy is itself changing and demanding that educators facilitate engagements with computer technologies. Beyond this, however, Kellner also draws upon the Deweyan connection between democracy and education to demonstrate how new social movements (and a range of groups and individuals) are using computer and information technologies to make important political interventions and so increase democratic tendencies within society (Kahn and Kellner 2004).

More fancifully, the great guru in educational technology, Seymour Papert, believes that computers have arisen at this particular historical moment to overcome

institutional stagnation and that they provide the means for total learner-centeredness (1996). In Papert's argument, children have historically been unfortunately trapped within non-pedagogical school walls, they have been subjected to authoritarian and hierarchical grading systems, and have been trained to be generally dependent upon adults. Computer technology, he thinks, moves us in a direction of self-directed and self-interested learning and so represents a pedagogical revolution. Interestingly, Papert's vision does correspond in a variety of ways with the radical educational critic Ivan Illich's notion of "learning webs" (Illich 1970), which thus may be said to anticipate the Internet's various social networks, blogs, wikis, chat rooms, list-servs, and compendious archives in many respects. Computers in education, then, arguably promote learner autonomy and conviviality in progressive fashions.

Another key argument often made today for computers in education is that it will allow for "distance education" – online learning forums in which adult students can engage at their leisure, in their own style, and in a time-frame that accords with their often busy work and family schedules. While such educational strategies are anathema to theorists like Bowers (2000) and Noble (1998), the fact is that higher education has increasingly become identified with free-market strategies and the type of for-profit education typical of online degree programs represents a booming business sector (Slaughter and Rhoades 2004). Thus, educational technology also represents sound business sense.

One of chief arguments against infusing computer technology in education takes up the question of economics from the other side, finding that computer technology is generally allotted in a hegemonic manner that further disenfranchises underserved

communities. It is argued that wealthy schools and districts often have greater access to computer technology and Internet access, and so minority cultures and poorer schools and districts are placed in a role of having always to compete on an unequal playing field (Darder 2002). In fact, the "digital divide" does remain a serious problem that exacerbates issues of educational equity and despite trends charting an increase of use by every demographic, Internet access in the United States remains largely stratified along lines of race, class, and level of educational attainment (Lenhart, et al, 2003). Deeper questions erupt around matters of participatory design in educational technologies, and it is at best ironic that under-represented groups would have to struggle to become literate in a technology that is not clearly designed with their needs in mind, such that they might someday be literate enough to gain employment that might let them redirect the manner of design in a more egalitarian manner.

This is to raise the more global question as to how universally appropriate computer technology and the Internet are and whether they are not specifically Western cultural apparatuses despite their global reach and the continued development of a worldwide information society. This is exactly the charge made by many of the so-called "neo-luddite" critics, but it is importantly bolstered by many third world activists and academics who charge that computer technology is primarily a capitalist technology, developed primarily by white men of advanced developed countries. The exportation of this technology, then, results in educational transformation only at the expense of cultural invasion in the developing world (Third World Network 1993). Ivan Illich himself maintained a critical and cynical view of computer technologies, expressing caution about high-technology solutions for lower-technology regions and Paulo Freire, while supportive

of computer technology, also "rejected from the outset any slavish imitation of given forms of 'modernization' driven by the unregulated capitalist exploitation of technologies" (Morrow and Torres 2002).

Such critiques make further sense when the environmental costs of computer technologies are considered – with the prime mineral involved in constructing computer chips, coltan, being mined under highly questionable circumstances in central Africa, the continent with the least computer access. Additionally, the metals involved in computer technologies are actually toxic and it has been revealed that, hesitant to pollute their own land with the proliferating outmoded peripherals, technology-rich countries like the United States now ship their toxic trash to continents like Africa and Asia. Thus, ecological educators must question infused-technology as representing a paradigm that can fail to withstand contemporary needs for sustainability and environmental justice.

My position

It seems clear that computer technology does offer contemporary education many benefits, as it has provided a greater access to information to more people than ever before, and has also facilitated the growth of new global social movements for peace and justice in such a way that popular education is today unthinkable without it. My work with Douglas Kellner more fully spells out my position in this regard, which draws from Kellner's critical theory of technology. Against one-sided critiques of present educational technology that are overly technophilic or technophobic, we seek to understand the present moment in education and society as marked by objective ambiguity. Reality should be seen as complex and contested by a variety of forces, rich with alternatives that are immediately

present and yet ideologically, normatively, or otherwise blocked from achieving their full realization in their service to society. It is therefore the utopian challenge to radicalize social practices and institutions through the application of new diagnostic critical theories and alternative pedagogies such that oppressive cultural and political features are negated, even as progressive tendencies within everyday life are articulated and re-affirmed. To speak of technology, politics and the reconstruction of education, then, is to historicize and critically challenge current trends in education towards using the tools at hand to create further openings for transformative and liberatory praxis.

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