TECHNOLOGY AND ADULT EDUCATION
TOWARDS A POLICY

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My object in this paper is to consider adult education
policy towards technology, what it is, what it ought to be and to
argue that one response of adult education to the challenge posed
by contemporary technology needs to be a re-examination of its
epistemological underpinnings.

There is a widespread view according to which we are moving
towards an information society, a new technological world, full
of wonderful possibilities that are transforming, even
revolutionizing our world. According to this view critics who
question the benefits of technology are not to be taken
seriously. They are resisting progress, trying to "take the world
back to a simpler age." On this view technological "progress" is
both inevitable and good. The more the better.

Examples of this viewpoint can be found in the
January/February issue of Lifelong Learning (1993), which is
devoted to "technology." The first article is entitled
"Technology: Decades Old and Still Growing!" The theme is that
"[l]ike it or not, technology is transforming and revolutionizing
adult education." The author points out that even though
technology "obviously surrounds us" it "still doesn't pervade our
adult education programs." We are "a long way behind." We are
"missing major opportunities to improve the efficiency of our
offices as well as the quality of our programs and services."
There is no doubt that the author thinks that technology should
"pervade" adult education.

A slightly more cautious approach is taken in the second
article, "Technology - Servant or Master?" which recognizes that
criticisms have been voiced about the wholesale embrace of
technology. By way of example the author examines the claim that
computers increase the amount of control the learner gains over

the education process. In her judgement the research is not in on this question. On the whole, however, she is upbeat, merely calling for more research to guide the appropriation of technology. The issue of learner control is discussed strictly in terms of the individual student. There is not the slightest hint that learner control of education is part of a larger political, economic, and social question.

Policy towards technology, according to these authors, should be aimed at "catching up." Specific policy recommendations include establishing a national center or regional centers to assess and disseminate information about technology, regular, unbiased consumer-oriented reports, more research on technology and learning.

Is this "common sense" point of view adequate? If not, what is wrong with it? Questions that need to be raised include, Is it an accident that high tech pervades the military and the corporate world and that education is playing catch up? Is it because educators are backward in their thinking? Who is the "information society" benefitting? Who is gaining and who is losing in the "new technological world"? Is "control" an issue that relates merely to the individual learner's control of the learning process? Who is controlling the new technology? Is technology extending participation in decision-making? Or is it, as some would argue, being used to concentrate control and power in fewer and fewer hands?

As over against the view that the advent of the "information society" is inevitable, it is essential to ask such questions as, Why is it inevitable? Who says so? What ends is technology serving? Whose ends? What kind of society is the "information society"? What impact is it having on the economy? Is it being used to bring about a more equal sharing of power and goods? What impact is it having on knowledge and culture? Is it enlarging and enriching our view of humanity? Is it humanizing or dehumanizing? Who is it humanizing? Who is it dehumanizing? Is it increasing human dignity and respect for differences?

These questions about how to view technology lead back to

questions about how to view adult education. The two articles in question discuss adult education <u>without any reference to the larger social, political, economic, and cultural context</u>. The only exception to this rather sweeping statement are the references to the new technological world itself, the information society, and the like.

Over against this "common sense" approach to adult education and technology I propose an epistemological view of adult education as being about the control of perception, knowledge, reality. I mean by this the social, economic, political, and cultural processes and events and actions by which knowledge and knowing is lived, experienced, created, reproduced, transformed and controlled. The formal adult educational enterprise can not be abstracted from such processes. Adult education policy on technology must, therefore, start by considering technology in context.

For example, one of the most dramatic and significant ways new computer and communication technologies have been put to use has been to turn national corporations into multinational entities. One estimate is that internal corporate communications account for about 90 percent of all data flow via satellite systems. And around 50 percent of all data flow across national borders "takes place within the communication networks of individual transnational corporations" (Michael Traber, 1986, p. 3, citing Jussawalla, 1985).

What impact is this having on society? Ann Seidman, professor in the International Development and Social Change Program at Clark University in Massachusetts, argues that the technological revolution has enabled transnational corporations in many industries such as agriculture, mining, and manufacturing to pit wages, working conditions, and living standards of workers in the United States against the near slave-labor conditions of workers in Third World countries (Ann Seidman, in Gaventa, p. 211). She documents the way in which corporate policies in the South and in Third World countries have worked <u>against</u> improved human services such as health care and education and work to keep

wages down.

Multi-national corporations, the military, and big government dominate the world of high tech. Some would argue that the spin off is now making technological marvels available to the individual entrepreneur and small business. While this is true, it does not take away from the enormous imbalance in power and control of technology tilted in favor of the giant corporations.

Is this imbalance in power and access to technology, or other social goods, irrelevant to adult education? If we take seriously the rhetoric about an information revolution taking place we might expect rising levels of education in this country. But of course the fact is that basic illiteracy, not to mention "computer literacy," is shockingly high and is increasing, not decreasing. Thirty million adults in the United States cannot read. How is adult education policy addressing this crisis? Not very effectively. Congress itself estimates that Federal, State, municipal, and private literacy programs have only been able to reach 5 percent of the total illiterate population (Joint Resolution designating July 2, 1991 as "National Literacy Day," Congressional Record, Vol. 137, 1991).

Is this failure of policy an accident, an oversight, a lack of funds? Students of public adult education policy have concluded that federal programs spend substantially more on advantaged than on disadvantaged persons[1]. The most dramatic recent federal policy related to technology and education is the enactment of the "High-Performance Computing Act of 1991." Who is this going to benefit?

Adult education policy on technology must be based on an understanding of the interconnectedness of technology with social, political, economic, and cultural forces. One perspective on this interconnectedness is Robert Reich's recent study, The Work of Nations, which attempts to update our understanding of the relationship between the nation and the corporation in the

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[1]Christoffel, 1978, p. 357, cited in Griffith and Fujita-Starck, p. 169.

light of global changes since the Second World War. Reich's ambitious essay is useful if for no other reason than that it goes well beyond most popular efforts to characterize the "information age."

The central point of Reich's study is that the hierarchical core corporation of the past based on high volume production has given way in the past thirty years to new "global webs," multinational corporations based on high value for whom corporate nationality is becoming irrelevant. One result of this change is that the rich are getting richer and the poor, poorer. Particularly disturbing is that the new rich are "seceding" from the rest of the nation, withdrawing into their own communities.

Reich's study is highly relevant to the question of adult education policy on technology. In the first place, it is the new communications and computer technologies that have made possible the development of the new global webs:

As the world shrinks through efficiencies in telecommunications and transportation, such groups [of symbol analysts] in one nation are able to combine their skills with those of people located in other nations in order to provide the greatest value to customers located almost anywhere. The threads of the global web are computers, facsimile machines, satellites, high-resolution monitors, and modems, all of them linking designers, engineers, contractors, licenses, and dealers worldwide (p. 111).

In the second place, those who are driving this new economy and who are benefitting from it are a class of what we might call "super learners." Reich calls them "symbol analysts," but their core skills are problem identification, problem-solving, and linking problem-solvers with problem-identifiers. Their work is a form of on-going learning.

In other words, modern high tech _is_ being put to use by adult learners, by _some_ adult learners out there. If so, then one issue is why some adult learners have access to this technology while others do not. When we talk about "learners," therefore, we

need to be specific. We need to recognize that not all "learners" are equal. Therefore, we cannot _remain_ at the level of the individual learner or we risk talking in meaningless generalities.

A second issue concerns the _ends_ to which the technology is being applied. Are the skills and insights of symbolic analysts being directed towards public goods or private gain? According to Reich the assymetries of power and dependency between symbolic analysts, on the one hand, and routine producers or in-person servers, on the other, are growing. At the same time high tech is increasingly being used by those who control it to benefit their own communities and less and less for the public as a whole, creating two school systems, for example (p. 270).

The first point to be made, then, is that to develop an adequate adult education policy on technology requires that we pull "technology" down out of its abstract autonomy and insist on its interconnectedness within the total construction of reality, social, political, economic, cultural, its embeddedness within the human spirit. Technology is being used by those in power to shape society according to their own interests and ends. The evidence of Gaventa and Reich and many others suggests that these interests and ends are leading to greater inequalities in power, privilege, and wealth.

Adult education cannot simply ignore the ways in which technology is implicated in these social, political, and economic realities. And this raises questions about the relationship of adult education to social, political, and economic institutions. Reflecting on technology, therefore, forces attention back to questions about the scope and identity of adult education itself, questions about the political economy of adult education, such as those raised by Phyllis Cunningham in connection with the relationship of education to work (1993). Adult education policy _cannot_ restrict its attention to the individual.

The second point regarding adult education policy on technology has to do with the impact of technology on knowledge, on ways of knowing, ways of thinking, ways of perception. Reich's

description of the work of symbolic analysts bears on this
subject. "Symbolic analysts," he says,

> solve, identify, and broker problems by manipulating
> symbols. They simplify reality into abstract images that can
> be rearranged, juggled, experimented with, communicated to
> other specialists, and then, eventually, transfomed back
> into reality. The manipulations are done with analytic
> tools, sharpened by experience. ... (p. 178. Emphasis
> added).

Reich describes how technology is used by symbolic analysts
to manipulate "reality," to influence the way people see reality.
"People" here are consumers, customers, a "market," the "public."
One example of such manipulation is the symbol of the
"information age" itself, which is used by communication
corporations among others in their advertising. This direct,
intentional use of communications technology in particular to
influence the way we think and see reality impinges directly on
the concerns of adult education. It is an issue which challenges
the epistemological foundations of the field. Is adult education
equipped to respond to this sort of manipulation of reality?

But many have called attention to the way technology, at a
more fundamental level, affects the way we think. Michael
Collins, for example, believes that adult education is in crisis
because of the extent to which it has come under the sway of
"technocracy" which he defines as a "tendency to make more and
more areas of human endeavour . . . amenable to measurement and
techno-bureaucratic control according to what is invoked as a
scientific approach" (1991, p. 9). Technocracy as defined by
Collins is an "ideology," a "paradigm," an "ethos," a form of
rationality, a "cult of efficiency." Adult education's
preoccupation with professionalization, its "technicist"
understanding of self-directed learning, its addiction to
comptency-based learning models are examples of "technocratic"
influence.

In other words, the challenge posed by technology requires
that adult education examine itself and its ways of thinking,

seeing, and knowing. To what extent has adult education's very capacity to see and know the world been constricted by technology rather than enlarged?

The seeds of this sort of "technocractic" thinking go back a long way and the impact has been characterized in even stronger terms. Neil Postman, distinguishing between tool-using cultures and technocracies, suggests that Francis Bacon was the first man of technocracy and that nineteenth century England was the first techocracy (1992, p. 38,40). What we are witnessing today, according to Postman, is "technopoly." Technopoly is "totalitarian technocracy," which eliminates alternative ways of thinking, seeing, and knowing.

> It does not make them illegal. It does not make them immoral. It does not even make them unpopular. It makes them invisible and therefore irrelevant. And it does so by redefining what we mean by religion, by art, by family, by politics, by history, by truth, by privacy, by intelligence, so that our definitions fit its new requirements (1992, p. 48).

One story recounted by Postman says it all. John McCarthy, the inventor of the term "artificial intelligence," claims that "even machines as simple as thermostats can be said to have beliefs." When McCarthy was asked what beliefs a thermostat can have McCarthy replied, "My thermostat has three beliefs - it's too hot in here, it's too cold in here, and it's just right in here" (1992, p. 111, citing Searle, p. 30). Interiority, consciousness, the spirit, where belief occurs, become invisible in this way of seeing life.

I suggest that the abstract, decontextualized approach to technology itself and to adult education which characterizes the two articles cited at the beginning of this essay is one example of the constricting, compartmentalized influence of "technocratic" thinking. How much of life has become invisible to adult education because of this official, specialized way of seeing? To what extent has adult education theory, policy and practice become so compartmentalized it has lost any sense of the whole, any sense of responsibility for synthesis, any visionary

ambition.

We have moved from considering "technology" in and for itself to considering it as a symbol. As a symbol, a word like "technology" can only be understood by considering what we <u>bring</u> to the word, what we project onto it, by considering the assumptions we bring, the associations, the connotations, by considering what we take for granted when we hear the word.

"Technology" is a word. Words are tools that are used to communicate with, to think with, to construct reality with. The word "technology" has become one of the most powerful symbols in use today. It has come to embody a whole world of ideas, ideologies, myths.

Postman and Collins are dealing with technology as symbol, myth, ideology. What is essential to keep in mind is that such ways of thinking about technology are not <u>intrinsic</u> to technology itself. They are <u>human</u> constructs. Up until very recently technology was associated with control, automation, centralization. Now there is a new "paradigm" in which technology is being associated with change, learning, discovery, creativity, symbol manipulation. Such associations, such trends, are the work of human agents, not outside, inevitable forces.

Michael Collins's target is the cult of efficiency in adult education, a cult which has been reenforced by technology. But the new uses of technology described by Reich and others has moved to a different paradigm, discovery, inquiry, problem-solving, all of which characterize creative thinking and learning. There is an irony here in that while adult education is seeking to emulate the algorithmic thinking of technology, technology is moving beyond this to new models. The same thing occurred earlier in the attempt of the social sciences to emulate physics even as physics had moved on to an epistemology of uncertainty.

On the other hand, the creative thinking of the new symbolic analysts operates within the framework of corporate, market and economic reality. It is not committed to enlarging participation and equity. In other words, the new discovery of the virtues of

the learning organization associated with the new "informating" power of technology (See Zuboff, 1988), and of the values of discovery, creative thinking, problem-solving, symbolic analysis, etc., which are replacing the old model of automation and control associated with computer technology - these new developments need to be understood within the total context of the interrelationships between power and knowledge.

In the last analysis What is the most significant point in Reich's essay? It is the growing gap between rich and poor and the secession of the rich from the nation. Why? Because this is the single biggest departure from equity and the single biggest threat to a democratic participatory society. So what? Why does this matter? It matters because the highest values are human, spiritual, texture.

The question of technology, therefore, confronts adult education with the necessity of judgement, of moral and ethical choice as to its ultimate values. And this, in turn, confronts it with the necessity of examining the "objectivist" epistemological underpinnings it uses to avoid choices about such fundamental matters in the name of objectivity. Technology, as it is being used by those who control it, is a threat to the human spirit.[2] Opposing its use in this way by those in power requires among other things, a new epistemology that makes room for the spirit, an epistemology that embodies what matters most - richness, integration of outer and inner, of spirit and world, "transcendence" in the sense of crossing boundaries and bringing life together, wholeness.

The kind of divided and polarized society technology is being used to construct today is a threat to human life as I envision it. A compartmentalized, polarized society requires compartmentalized thinking. For me the enemy is claustrophobia and the thought of security guarded compounds, living in them or outside them is very threatening. I believe in crossing

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[2]The language of vocation and mission which Michael Collins seeks to re-introduce is in line with my argument here.

boundaries. Is there a place for fences? Yes but not walled compounds, sealed up with no intercourse across. So Reich's projection is one I cannot subscribe to. The "new sensibility" I am committed to is one which breaks down the existing walls and compartments.

To end a discussion of technology by talking about epistemology may at first glance appear to be a retreat into academic obscurantism. A few comments are in order by way of defense.

First, I am not the first to do so. Langdon Winner concluded his study of autonomous technology by calling for "epistemological Luddism" (Winner, 1977). By this he was referring to the practical dismantling of sociotechnical systems in operation "to learn what they are doing for or to mankind," and to figure out how to employ them for alternative ends. I am calling for something similar in arguing that it is essential to remind ourselves that technology is not a law unto itself, an inevitable fate that we must bow to or be doomed. One way of reminding ourselves of the origins of technology in the human spirit, the imagination, is to go back and reconstruct the origins and history of our present technology.[3]

Second, with the advent of the computer, technology has begun to affect knowledge _directly_. Not only does the computer make it easier to collect and organize and disseminate knowledge, it raises questions about what we _mean_ by knowledge. In other words, it raises epistemological questions directly. This is the significance of the artificial intelligence discussion.

But it is not only in connection with that discussion, which might be set aside as an esoteric and futile enterprise, that epistemological quesions are raised. The computer has spotlighted

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[3]An example of this kind of very practical "epistemological Luddism," is the study of the social basis of the microelectronics revolution by Molina. Molina documents the dominance of military and corporate interests aided by government and science. He ends with a thoughtful consideration of possible sources and strategies for the emergence of "democratic and human-centered forms of social development."

the fact that knowledge is not only discovered it is created, produced, constructed. Reich's discussion of the role of the new class of "symbolic analysts" shows how important this has become. Before Reich Peter Drucker has coined the phrase "knowledge worker" to highlight the same reality. What does it mean to talk about knowledge as a product? What does this mean for learning? What does it mean for our understanding of knowledge, belief, truth? It certainly means that we must start asking new questions, such as, Who is producing the knowledge? Who controls the knowledge? Who determines what is considered knowledge and reality?

I conclude, then, technology confronts adult education with rethinking its epistemology.

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