

**Digital Discourses, On-Line Classes, Electronic Documents:  
Developing New University Technocultures**

Timothy W. Luke  
Department of Political Science  
Virginia Polytechnic Institute  
and State University  
Blacksburg, VA  
twluke@vt.edu

Presented at Learning OnLine '98:  
Building the Virtual University,  
Hotel Roanoke, Roanoke, VA, June 18-21, 1998

## ABSTRACT

This paper explores the many possibilities for a "virtual university" by rethinking the experiences of building the Virginia Tech Cyberschool and then counterposing them against another vision for the virtual university, namely, the Western Governors University. Along the way, it considers how the idea for a virtual university expresses broader changes, including the informationalization of the economy, globalization in society, and the digitalization of cultural discourse. It concludes that learning on-line represents a new technoculture, or the collective understanding of social acts and artifacts organized around technologies, that should direct our attention to reassessing how larger changes in the culture, economy, and society affect the university instead of arguing over whether or not computers belong in the classroom.

## **O. Prologue: Cyberspace as Environment**

Inasmuch as individuals and groups now choose, or are coerced, to communicate, keep accounts, publish, buy products, work, access documents, or learn on-line in computer networks, the digital domain is becoming an inescapable venue for the conduct of life. All of these activities are migrating out of analog settings into cyberspace. Cyberspace today, however, is evolving into a heteronomous global anarchy with many proliferating layers in which new would-be authorities are competing to control its uses in a self-help system of platform wars, chip races, and operating system alliances.

Dizard characterizes these networks of networks as "the Meganet," or,

...a powerful but enigmatic engine of change, the biggest and most complex machine in human history. Its effects are paradoxically universal and parochial, uniting and dividing, constructive and destructive. It will create a new communications culture, overlaid on old ethnic, economic, religious, and national patterns and attitudes. An electronic environment is evolving in which old guideposts are submerged in a stream of bits and bytes exchanging a bewildering variety of messages among billions of individuals (1998: 14).

Unlike many overwrought celebrations of cyberspace, this analysis highlights how the machinic infrastructure of boxes and wires, cables and satellites, servers and relays that underpin the computer networks are, in turn, generating a new technoculture.

The expansive telemetries of the digital domain are displacing, subsuming, and reshaping the material markets of closed territorialities in the real world (Deibert, 1997). While

the name is anachronistic, this "wired world" plainly is much more than its boxes and wires:

It is an entirely new product space. It is an entirely new market space. The Internet product space, combined with the World Wide Web market space, establishes one of the most powerful platforms ever contrived for doing business. The Wired World is to the friction-free economy what the interstate highway system, air cargo system, and telephone/fax system were to the old economy (Lewis, 1997: 115).

Even though enthusiasts continue to effuse over "a near-infinite supply of products, services, and ideas" that this friction-free economy apparently produces "a near-zero cost" (Lewis, 1997: 115), its modularization, specialization, acceleration, and componentization of many goods and services on-line actually is not generating a free friction economy. Indeed, because it is scorching many who feel its first effects.

Cyberspace cannot be dismissed as an ephemeral playground of electronic fantasies, transnational businesses instead are turning it into a temporal environment in which important daily events are set and at which new social discourses are addressed (Cairncross, 1997). Cyberspace is becoming the basis for reimagining community (Anderson, 1991), because it now materially surrounds individuals and groups as an environment. It mediates economic forces, articulates political directives, and circulates social constraints as informational effects. Work is accomplished through cyberspace, culture is refashioned out of cyberspace, and power is transmitted within cyberspace. In these ways, as the digerati (Brockman, 1996) assert, it now operates as

a primary scene of society and essential setting for the economy.

### **I. The Virginia Tech Cyberschool: Basic Foundations**

To understand the significance of using computers to teach college and university courses, however, one ought not to fixate upon the machines themselves. The shopworn humanist lament over boxes and wires ensnaring autonomous personal development in a telematic tangle of electronic alienation utterly misses what is really happening under its upturned nose: epochal changes in human culture. The acts and artifacts used to reproduce collective understandings among specific social groups are changing profoundly: print discourses, face-to-face classes, paper documents are being displaced by digital discourses, on-line classes, electronic documents. The former will not entirely disappear, but so too can they not be counted upon to reign hegemonic. The latter will never fully be perfected, but so too can they not be expected to remain oddities.

Some misconstrue this change as a confrontation of humans with machines, but it is, in fact, a conflict between two different technocultures--one older and tied to mechanism, print, and corporal embodiment, another newer and wired into electronics, codes, and hyperreal telepresences. Building the virtual university is one piece of this new technoculture, just as the first founding of medieval universities articulated yet another technoculture tied to the scriptorium, lecture hall, and auditor. Even though they can throw much light upon each other, these new university technocultures do not exhaust the full range

of structural change occurring with informationalization in the global economy and society.

This paper, then, will reposition the virtual university--with its many perils and prospects--amidst these broader shifts.

First, it hopes to reveal why existing university practices are so difficult to change, and, second, it will try to suggest how some emergent technocultural values lead more easily toward change. Yet, it also worries about what sort of changes, and defined by whom in the larger society? Most importantly, however, it advocates building virtual universities as a supplement to existing university institutions, which might enable them to create truly new learning communities and learned discourses, rather than turning them into a substitute for present-day universities in a misguided effort to commodify they have always done, but what should not be sold.

The Cyberschool faculty in the College of Arts and Sciences at Virginia Tech are a loosely organized, bottom-up network of individual scholars working with technology, but their activities illustrate, once again, how technology is not, as many believe, "just technology." It also is culture, economics, and politics; and, when technology is combined with education, it becomes even more culturally unstable, economically demanding, and politically threatening. On one side, many exponents of technologically-enhanced teaching envision it as leading to new discursive formations, intellectual conventions, and scientific practices. On the other side, many opponents regard any efforts taken toward

effecting such change as malformations, unconventionalities, and malpractices. Along with their individual attempts, then, to transform their own courses, the Cyberschool faculty also operate as an advocacy organization or social movement to further publicize and popularize the use of computer-mediated communication in university instruction. This very important, because despite what many futurists claim, technology does nothing on its own. Technically-driven change is neither automatic nor easy; and, every apparent technological innovation often is hobbled by significant anti-technological resistance. Yet, the myths that most people share about machines makes it quite difficult to think outside of the box when it comes to technology. If nothing else, the experiences of the Cyberschool faculty at Virginia Tech have exposed the emptiness of these myths as these scholars have constructed the basic foundations for one virtual university.

Virginia Tech began constructing its virtual version of itself in 1993 with the launch of the Faculty Development Initiative. An experiment in the implementation of distributed computing, the FDI put a new Apple desktop computer, a suite of applications, and nearly a week's worth of hands-on training into the hands of ordinary faculty with the hope that they, first, would quit using the old, expensive VTVM1 mainframe system and, second, might start playing around with the new personal computer in their teaching, research, and service. Without this first piece of almost accidental history, much less would be occurring

around this particular campus because it got computers out of the control of those who everyone once knew should have them--engineers, computer scientists, chemists--and into the possession of those who many still think do not need them--philosophers, political scientists, poets. Once those who did not need or could not use personal computers got a hold of them, everything began to change rapidly, fundamentally, and unpredictably.

A small group of faculty in the College of Arts and Sciences was charged by the new Dean, Robert C. Bates, to think about how to use computers to break the credit-for-contact paradigm. Led initially by Associate Dean Lucinda Roy, this committee advanced a proposal to construct a virtual college in November 1994 (Luke, 1994) around a series of on-line courses: the Virginia Tech Cyberschool. Because of the Blacksburg Electronic Village, students and faculty had the Internet access and technical skills to make this vision a reality in summer 1995 with the first Virginia Tech Cyberschool courses. At the same time, a major Sloan Foundation grant led to the development of new computer-enhanced introductory biology courses in the ACCESS project, and a mix of totally on-line courses was offered at a distance over the Net in summer 1996. The university self-study of 1996-1998 aimed its energies at reimagining Virginia Tech around its high technology strengths, including the enhancement of its on-line teaching capabilities. Totally on-line and complete MA degree programs in physical education and political science went up on the WWW in 1996-1997, and Virginia Tech On-Line--a full service

virtual campus site--was activated in 1997-1998. All graduate theses and dissertations were required to be archived as digital documents in 1997, and all entering students will be required to have personal ownership of a computer in 1998.

Five years after the first FDI cohort, Virginia Tech has scores of fully on-line classes up and running, hundreds of faculty participating in this grand rethinking of the university's affairs, and thousands of students trained and equipped to deal after graduation with the digital cultures of work, leisure, and public life that are burgeoning off-campus. Almost all of this change came from within the faculty ranks, but it has been assisted significantly at every turn by a small dedicated cadre of technical specialists in the Office of Educational Technologies. Given the scope and depth of these moves toward a virtual university, the original pioneers at Virginia Tech have broken out of the skunkworks box they occupied in 1993 or 1994; indeed, the notion of a "virtual university" now challenges, questions or even threatens the working ways of the "material university" at Virginia Tech in many fundamental ways. And, this collision of values and practices is obviously one of contradictory technocultures. Like Lucinda Roy, I too feel that we at Virginia Tech have made it through the first phase, but these cultural contradictions require us "to assess what we've learned and start anew with some new approaches" (Young, 1998c: A24). Therefore, these remarks here are based on four years of experience with the Virginia Tech Cyberschool. They outline a

start toward, first, assessing what we have learned at Virginia Tech and, second, some thoughts about these new approaches in a broader national context.

## **II. Power/Knowledge and Digitalization**

As Foucault suggests, the modernization project lies at the heart of all present-day disciplinary systems of authority and control, but this project is also always contested, incomplete, and on-going rather than accepted, complete, and over with. He also indicates how the economic take-off of Western industrial growth saw "the traditional, ritual, costly, violent forms of power" exercised by traditional sovereign authorities in corporal forms of command supplanted by "a subtle, calculated technology of subjection" (Foucault, 1979: 221) managed by modern professional-technical experts through many more non-corporal forms of control. To understand the workings of modern economies and societies, "the two processes--the accumulation of men and the accumulation of capital--cannot be separated; it would not have been possible to solve the problem of the accumulation of men without the growth of an apparatus of production capable of both sustaining them and using them; conversely, the techniques that made the cumulative multiplicity of men useful accelerated the accumulation of capital" (Foucault, 1979: 221).

These relations cannot be ignored today in the reflexive modernization projects of informational enterprises, transnational capital, and neoliberal regimes. As Bowles and Gintis (1976: 11-17) assert, a correspondence principle fuses the

workplace and schooling in the political economy of contemporary society. Yet, a contradictory dynamic also plays out here. On the one hand, schools typically stabilize and protect modes of cultural instruction better suited to past systems of economy as they sustain cultural reproduction, while businesses, on the other hand, often innovate and undercut fixed modes of instruction in developing new systems of economy as they revolutionize economic production. The mode of instruction packs many ancient traditions in its vast baggage, but it is forced to carry all of this on quicker, more frequent trips to destinations where they are not needed, not wanted, and not appreciated.

#### A. The Corporal Basis of Teaching

On one level, as Ed Neal (1998: B4) claims, many university faculty do have "a healthy skepticism" about the efficacy of electronic technology in teaching. On another level, however, most educators also cannot break with traditional modes of authority as they follow their everyday procedures of professorial labor. Foucault's sense (1979: 3-69) of the coercive juridical power wielded by traditional sovereigns survives in the status and role of university level "professing; and, it is very clear that a lot of resistance to the Virginia Tech Cyberschool, for example, comes from those who are anxious about losing this power. In many ways, there still is a considerable measure of personal sovereignty attached to the professorial role, which conveys legitimacy to the learning derived from the old medieval lector/auditor relationships of the

lecture hall. When and where the professor, and his/her disciplinary faculty, decide to supply their knowledge is the time and location at which students are called to appear. Like a prince in his feudal court, the professor stands in front of and over the students working with clear spatial displays of superiority, and these relations repeat themselves in the convening of examinations, arrangement of office hours, giving of grades, and provision of written recommendations for students in any given class. This much derided "sage on the stage" model of education is stable recapitulation within a modern institution of feudal practices from these old systems of personal sovereignty inasmuch as its legitimacy and authenticity is tied to command, control, communication and intelligence over bodies: it is a regime of/or corporal instruction. Professors say that they must see the students, have them appear physically in seminar rooms and offices, observe them directly doing seat time in lecture halls, make them sit for examinations, and watch them perform in labs in order to attest to their learning. Attendance in class sitting below the lectern, like appearance in court kneeling before the throne, is the corporal sign of submission to professorial authority as well as the physical validation of student learning taking place in the presence of professorial power/knowledge. Successful corporal instruction inculcates knowledge to these authorities, because it develops, if nothing else, Sitzfleisch.

As petty as this seems, many educators cannot forsake these

small shreds of personal sovereignty. It is a source of individual empowerment, professional identity, and vocational legitimacy that ought not in their eyes to be abridged in any way, particularly those that interpose computer-mediated communications between teachers and learners. Becoming, as the standard tag line suggests, "a guide on the side" represents for them a profound loss of personal sovereignty as well as a loss of corporal control over the student body. The legitimation question becomes paramount: if we do not see them, if they do not come to class, to labs, to our offices, maybe even to campus, then how do we know that they are learning, studying, or even doing the work? The innate suspicion of professors about student dishonesty and indolence runs wild before the screens of on-line education. While these concerns are real, these same professors often ignore how students find clever means to evade their personal sovereignty in systems of corporal instruction. Physical presence guarantees, in and of itself, nothing unless and until the spectacle of professorial authority engages students in active learning. And, it seems quite clear now that on-line education actually requires more student activity in learning, but it often jars the professor inasmuch it uses mostly noncorporal and postsovereign forms of educational practice. Professorial anxieties about on-line learning, then, should probably center more correctly upon the rapid intrusion of more disciplinary forms of control being exerted over them rather than worrying about the diminution of their already microscopic

remnants of personal sovereignty (Foucault, 1979: 195-288).

The corporal quality of conventional higher education also is expressed by its emplaced, on-supply, synchronous forms of practice. On-line education's disemplaced, on-demand, asynchronous practices do not require the same corporal interactions implied by contact institutions, which often proves highly disconcerting to both professors and students. Many believe that their professorial powers will not work unless and until the student body materializes on campus in accord with the venerable agrarian calendar that once freed students from the fields to study through the fallow months following the harvest.

The university is heavily emplaced at special geographical sites in bricks-and-mortar buildings devoted to unique educational purposes, its faculties decide when and where they will supply their learned teachings to students physically assembled on campus, and material imparted directly to learners presumes their constant attendance in a physical presence. Higher education, like many other essentially carceral institutions, has been a system of corporal instruction, following closely on behind equally corporal exercises for teaching at the primary and secondary levels of education. To push purposely beyond corporal modes of engagement through telematics is a fundamental shock to this highly routinized pedagogical tradition.

#### B. F2F vs. On-line: A Platform War?

This opposition of on-line courses to F2F (face-to-face) classes sparks a great conflict in the academic world; yet, this

controversy also enables us to see how much of struggle might be reinterpreted, given a cybernetic metaphor, as a battle between different "operating systems." The presumption of anti-technological proponents of F2F traditional teaching is that their styles of professional operation are rooted in unmediated human contact free from any technical contaminants, while on-line courses represent totally alienating submission to the cold calculi of computers without any meaningful human contact whatsoever. These human(ist) (mis)readings of computer-mediated communication, on the one hand, fruitlessly collide, on the other hand, with technified celebrations of human/computer interactions as just another technology, which really is believed to be nothing new, even though it is thought to be qualitatively better.

Here a fresh recognition must be made. Traditional teaching in F2F classes is not pure unmediated human contact; these courses also unfold within, and because of, a complex collective of technologies. In fact, many commonplace criticisms of traditional university teaching implicitly targets drawbacks built into many of these technologies. First, a built environment of special purpose buildings anchors the F2F platform for education, channeling the conduct of teaching through spaces where students sit and listen while professors stand and talk. Corporal attendance and mental attentiveness are expectations of the lecture/examination hall as a central processing technology of F2F classes, but this apparatus is also supported by the

associated technologies of dormitories, dining halls, stadia, and playing fields to support the student body as well as libraries, research labs, studios, and arts centers to develop the student mind. Second, technocultures of print discourse, oral argument, bureaucratic record keeping, literary interpretation, written examination, and degree granting mediate faculty-student interactions in a fashion that many have excoriated for cultivating passivity, sophistry, indifference, pedantry, irrelevance, and futility. Time serving and rote recapitulation of empty orthodoxies can be performed, according to some, in exchange for degrees, but few question this cycle of self-perpetuating delusions because they too want the union cards or lunch tickets represented by winning degrees.

F2F teaching, then, persists, because it is a simple, resilient, and ubiquitous operating system accepted almost universally as a technology, despite its many intrinsic flaws. Its qualities as an operating system also are now completely naturalized and virtually unquestioned, but technologies with very certain quiddity constitute its fundamental matrices of functionality. If technology is "know how," then many streams of stable know how make F2F teaching at universities possible. Such know how so permeates everything we know and do that everything is now known and done at the highest level of education in these technological terms, but to assert that F2F teaching is uncontaminated by technology simply is too clever by half. Such positions, whether conscious or not, only mistake the contingent

artifices of one operating system as not being comparable to fixed verities in another now more naturalized system of operations.

On-line teaching is obviously an operating system, if only because it is mediated continuously through computer operating systems. Even so, the tacit assumptions of its system of operation do not necessarily conform to the allegations laid against it by traditionalists. First, any built environment can promote alienating experiences, but so too can it enhance communicative outcomes for human interaction. The emotional intensity and psychosocial diversity experienced in having an on-line persona suggests that computer-mediated communications are not necessarily just forms for distant dehumanized social disengagement. Second, the rhetorics of representation used in on-line communication can rival, if not surpass, those used to advance cultural, intellectual, and social messages in the built environments of contact institutions. In addition to text and graphics, on-line instruction can interweave audio, video, film, voice, and data through a single site to appeal to many different types of learning styles in ways that ordinary lectures, seminars or labs conducted in a F2F style cannot. A much higher degree of active student participation is needed simply to navigate through on-line instructional sites, and the possibilities for team-based, collectively organized, and jointly created documents for/of learning are possible from many different points in ways that F2F contact teaching cannot easily approximate.

Given these operational practices, on-line education has not been warmly welcomed on many university campuses. Some resist it because it obviously will require massive new investments in rapidly changing expensive infrastructure. Others resist it because it forces them out of comfortable fixed routines as they adapt to the demands of another medium grounded in less academic and more post literate styles of interaction. Still others resist it because it interposes a complex machinic apparatus between teachers and learners. And, a few resist it because it demands a reallocation of their time and energies away from research in the troubling and taxing pursuits of instruction. Ultimately, however, it is opposed, because its practices do not work well with the personal sovereignty of professors.

#### C. Informationalization and Individualization

On-line education might seem more au courant, because it articulates technologically and institutionally deeper structural changes in advanced industrial societies associated with greater individualization, increased personal choice, and lesser social solidarity. Yet, it also cannot be disassociated from the changes that telematics have promoted in the workings of universities, the operations of this workplace, the provisions of state-supported public goods, or the conventions of learned discourse. No discussion of on-line education should ignore its second and third order consequences in the economy and society by focusing solely on its first order of business in the academy. As Bowles and Gintis assert, there always is a powerful

correspondence principle at play in the organization of instruction whose modes of delivery on campus are expected to prefigure practices off campus in the organization of production and its mode of labor. To discuss learning on-line, then, implies a broader investigation of the lessons those off-line want such educational activities to anticipate, if not actually convey, in the mission of teaching.

The operational practices of on-line education mesh quite closely with today's deconcentration of collective solidarities and reorientation toward highly individualized life situations. What were the essentially fixed necessities of collective existence for economic class, political inequality, and social status in earlier forms of industrial society are being displaced by increasingly flexible options of personal choice under contemporary forms of informational society. As Beck asserts,

Individualization in this sense means that each person's biography is removed from given determinations and placed in his or her own hands, open and dependent on decisions. The proportion of life opportunities which are fundamentally closed to decision-making is decreasing and the proportion of the biography which is open and must be constructed personally is increasing....In the individualized society the individual must therefore learn, on pain of permanent disadvantage, to conceive of himself or herself as the center of action, as the planning office with respect to his/her own biography, abilities, orientations, relationships and so on (1992: 135).

Under these conditions of social reproduction, class distinctions persist; but, at the same time, they often lose significance as signs of social mobility, they are redefined as socially aggregated outcomes of individual choices, they lead to flexible

everchanging political coalitions, and they frequently resurface in sets of conflicts defined by ascribed traits like race, gender and ethnicity.

On-line education essentially is the organization of instruction around delivery systems and discursive modules that can be accessed by individuals from their laptop or desktop computers on demand. While small groups of students can collaborate in many different kinds of educational experiences, the basic target of most educational activities for on-line teaching is the individual. Indeed, highly individuated options are expected out of on-line instruction by individuals to fit seamlessly into and around the other clusters of choice their life histories gel within as they develop socially and culturally over time. Inasmuch as their technical designers can foresee these new realities, many course sites presume entrance and exit into their lessons by individuals--discretely, asynchronously, flexibly, and unrestrictedly--in order to function. Narratives of national unity, stories of scholarly worth, and discussions of civilizational purpose can be entirely extraneous at such sites because individuals are seeking personal goals, vocational benefits, and individual ends that usually stand separate and apart from any traditional collective entity.

In complete conformity with global markets, on-line education can both isolate and standardize individuals in their life experience. The private sphere is not a realm of liberty apart from all environmental connections; it is instead a zone

where "the outside turned inside and made private, of conditions and decisions made elsewhere, in the television networks, the educational system, in firms, or the labor market...with general disregard of their private, biographical consequences" (Beck, 1992: 133). Individual strings of choice are often threaded into and around loose collective institutions that foster joint dependency rather than real independence. Normality, however, is less and less institutionally planned, socially validated, and politically enforced. Instead the marketplace and labor assignments become the central organizing force of identity for many individuals, who are left assembling their lives out of a bevy of options in the sphere of school and work. "The key to a livelihood," as Beck asserts, "lies in the labor market. Suitability for the labor market demands education. Anyone who is denied access to either of these faces social and material oblivion. Without the proper training the situation is every bit as devastating as with training but without corresponding jobs" (1992: 133).

On-line education captures these currents in its mechanics. For the most part, it is a quick, cheap and effective way to turn inside deliberation into outside instruction, while bringing those with jobs (businesses) and those with training for jobs (would-be employees known as students) into a mutually satisfying equilibrium out in the market. The larger needs of corporate employers demanding a labor force can be matched with the smaller wants of individuals exercising their individual options without

preparing everyone en masse with skills that private enterprise might not need en bloc.

### **III. A Virtual University or Virtually a University?**

The Virginia Tech Cyberschool has an interesting history, and its development has enabled many to see the close interconnections between digitalization and power/knowledge in technocultural clashes over F2F or on-line teaching. At the same time, Virginia Tech's Cyberschool is only one among the nearly one thousand on-line universities that Forbes now counts out on the WWW, and it is only one of the 999 other virtual university experiments that have been eclipsed by the hoop-la over the Western Governors University. Here the possibilities for on-line learning at the university level acquire some of their most interesting and insidious implications, which deserve further and much closer consideration.

A consortium of seventeen Western states under the auspices of the Western Governors Association (WGA) resolved in February 1996 to collaborate together in the creation of a "virtual university." This new entity, or the Western Governors University (WGU), aims to push beyond the liberal education of traditional degree programs to "enhance the marketplace for demonstrated competence through certification that is widely accepted by employers and traditional institutions of higher learning" by prototyping "expected competencies" from any WGU course of study (Western Governors Association, 1997). Most importantly, the WGU intends to operate as a broker for

"multiple-source instructional inputs," whose acceptance for vending through the WGU will require "an explicit statement of the competencies that should be achieved upon completion, as well as an indication of the assessment methods that will be employed to certify these competencies" (Western Governors Association, 1997). Because the WGU must function in "the telecommunications age," the WGA directs that "flexibility and adaptability" be regarded as survival skills for individuals and institutions: "This premise," the WGA believes, "is no less applicable to legal form, governance, organization and structure than it is to technology and content" (Western Governors Association, 1997).

Oddly enough, the Western Governors University was launched as the nation's most preeminent "virtual university" at a Western Governors Association meeting during 1996 in Las Vegas, Nevada, the nation's foremost "virtual city." Pushed by Governor Michael O. Leavitt of Utah and Governor Roy Romer of Colorado, the WGU operates as a multistate combine. With its chief academic offices in Denver, its chief administrative offices in Salt Lake City, its main library support services in Albuquerque, and its basic registration and billing units in Pullman, Washington, the WGU is imagined to be a "virtual corporation" created by an inter-state "government consortium." Like most virtual corporations, these WGU headquarters are small, low overhead offices that only set quality control standards, fix policy expectations, and develop governance rules. Real academic services, however, will be outsourced from independent commercial

vendors or provided locally by public institutions at many distributed sites as WGU "franchises." By undercutting the average annual student costs of \$9,000 at a typical state university, the WGU aims to serve nontraditional older students, traditional college students needing extra courses, employees seeking various sorts of retraining, and life-long learners in the personal enrichment market. Competency-assessment, and not degrees, is to be the main measure of student success, but the WGU now offers a multi-track Associate of Arts degree (Western Governors University, 1998).

The WGU, then, will have no traditional collegiate forms. Its internal structures essentially are those of a functional shell as "a matter of operational convenience and efficiency" to implement its "degree-granting, licensed and accredited" missions without "the creation of a substantial overhead component" (Western Governor Association, 1997). By combining "technologically-delivered educational programming" with a certainty of "certification through competency assessment," the design criteria of the WGU are those shared by mobile, transnational capital formations, only now put into an academic setting: market-oriented, independent, client-centered, degree-granting, accredited, competency-based, non-teaching, high-quality, cost-effective, quickly-initiated, and regional in form and substance. Rather than trying to do everything, like a comprehensive state institution or a culturally enriching private school, the WGU aims to be a flexible, reflexive, hollowed-out

telematic junction for packaging/promoting/providing "outsourced content" through a regionalized network of knowledge networks already operating on the local, state, national, or international level. Thus, as Governors Leavitt and Romer advocate, its greatest value-adding potential is to be centered on four discrete tasks in today's fast capitalist economy:

1. Creating broader markets for existing educational and assessment services rather than by creating an independent capacity to provide those services.
2. Fostering the development of new products and/or providers where unmet needs are identified and where sharing the costs of materials development and promotion is possible.
3. Utilizing incentive (market) rather than regulatory mechanisms to ensure the effective functioning of the WGU.
4. Working to remove barriers to interstate flows of educational activities and competency-based assessments (Western Governors Association, 1997).

The bottomline here is "the bottomline" as the market reckons it, or the neoliberal faith that "the WGU can provide significant benefits to all of its constituent groups at lower cost than current approaches" (Western Governors Association, 1997).

The whole point of innovation for the WGU since its launch in 1996 has not been technological: it has instead been institutional, using technology and competition "to break down the barriers of regulations, bureaucracies, tradition, and turf" (Western Governors Association, 1997). And, this approach has attracted considerable corporate interests, including a large grant in February 1997 from the AT&T Foundation. As Rick Bailey, AT&T's law and government public affairs vice president and WGU Board of Trustee's member asserts, "AT&T is committed to

supporting projects that benefit education and serve the needs of the public...The Western Governors University is clearly such a project. It's a bold, 'break the mold' approach to higher education in the western states" (Western Governors Association, 1997). While the WGU features a few schools with established academic reputations, like the University of Hawaii, Washington State University, and Northern Arizona University, many of its members are much less distinguished, like Eastern New Mexico University, Colorado Electronic Community College, and Chadron State College (Nebraska), as sites of scholarly research or university-level teaching. Despite this obvious lack of solid, high-quality academic foundations, the WGU's development plans for the virtual university, even though the school has yet served fewer than 100 students, already have acquired awesome mythic dimensions. Indeed, the WGU has exploited this bizarre fame in a canned Power Point demonstration on its websites, which begins with this screen: "Western Governors University...at times, reputation precedes reality" (Western Governors Association, 1997).

Critics of higher education on traditional campuses, like Governors Leavitt and Romer, fall prey to the fallacy of generalization, believing the resistance to change that they see in one state or at one institution is true of all other states and institutions. In fact, much of the innovation, as the Virginia Tech Cyberschool indicates, driving the deployment of computers in higher education begins first, and voluntarily so,

on many different university campuses. Something else, then, comes into play with criticisms like those from Governor Leavitt of Utah, which articulates the cost-cutting agendas of neo-liberalism in the political economy of post-Cold War welfare states.

If we can associate Indiana University, Colorado University or North Carolina State University with the states that have taxed their citizens and businesses to support them, then "the virtual university" by the WGU must be recognized as a very contemporary artifact of the current neoliberal era: "the virtual state." Instead of standing for a political community's vision of its self and society as a special site for civic Bildung, like the traditional university has always tried to do, the WGU is a creature of states that have virtually repudiated their sovereign mission in favor of franchising out once public authority to private concerns as well as facilitating the business ventures of big corporations. WGU puts corporate and commercial providers as well as other sovereign state providers of educational services on a par with public universities from within its home base states by submitting all to its competency regime of degree accrediting.

Even though it is a non-profit, private corporation, the WGU hopes to make money by brokering knowledge sources to learning clients--private individuals, corporate concerns, and other public entities. By 2006, or ten years after its inception, the WGU hopes to enroll 8,000 students in its competency based degree

programs, or that market where states have traditionally supported public education, but it also wants to see 15,000 students in its job skills-oriented certificate programs, 30,000 students in corporate training programs, and 42,000 students taking classes from other institutions--public and private, state and corporate, intro-WGU state and non-WGU state--to meet its business plan objectives (Blumenstyk, 1998: 21). The virtualization of state is readily apparent in these goals, which center upon not the ultimate socialization of 18-to-23 year olds but rather upon the job training of over 25 age students.

These tendencies toward the virtualization of state power at this virtual university also are supported by its administrative structures. Only two of its fourteen trustees, Clara M. Lovett and Samuel H. Smith, respectively Presidents of Northern Arizona University and Washington State University, are, in fact, academics. The board of trustees are co-chaired by Michael O. Leavitt, Governor of Utah, and Roy Romer, Governor of Colorado. Another eight trustees are corporate and big not-for-profit foundation executives: Rick Bailey, VP for Federal Government Affairs at AT&T; Eric A. Benhamou, President and CEO, 3Com Corporation; David Gardner, President, William & Flora Hewlett Foundation; Barbara Gordon, VP for Global Accounts at Sun Microsystems; Frank Mayadas, Senior Program Officer and Executive Director, Alfred P. Sloane Foundation; Eric Schmit, CEO of Novell, Inc.; and, Anne-Lee Verville, former General Manager of Global Education Industry, IBM. Two other politicians fill out the

ranks: Jim Geringer, Governor of Wyoming, and David Powers, Executive Director of the Nebraska Coordinating Commission on Higher Education (Blumenstyk, 1998A: A22).

This capability for on-line learning at Western Governors University is intriguing, but critics wrongly mistake these technological bells-and-whistles as the real innovations of WGU.

In fact, on-line learning already has been available at many other schools, including Virginia Tech, for three, five or more years. The bigger changes at Western Governors University are embedded in the institutional assumptions behind its operations and structures. Utah Governor Michael O. Leavitt, one of WGU's main architects, attacks the symbolic economy of "academic credits" that underpins higher education, arguing its systems of valorization are antiquated, monopolistic, and irrational. Because its value is tied to institutional prestige, its transportability is limited due to incommensurate transferability standards, and its worth is weighed only in the aggregate as pieces of completed degrees, Leavitt's analysis of higher education is simple--it is a "kind of feudal system"--and his solutions for its modernization is direct--competition from "the Internet, new institutions like the for-profit University of Phoenix....a plethora of corporate-sponsored training programs are creating vast opportunities for the kind of lifelong learning that many Americans now are seeking....'the market is driving it. People are demanding it" (Blumenstyk, 1998B: A23). In turn, the WGU will create its own new system of academic knowledge units of

value for easy exchange, common measurement, and permanent storage in a new "kind of 'currency'--the tests of competencies that will show whether the students have mastered the course material....so that employers and other institutions can at least be assured of what the student knows" (Blumenstyk, 1998B: A23).

Western Governors University, then, is about constructing a new type of educational center, which essentially serves as a broker of knowledge between outsourced content providers and individual client learners whose joint coproduction of learning is then vetted by a common new regime of accreditation grounded upon competency examinations. As Governor Leavitt suggests, the WGU will operate as

"'a kind of New York Stock Exchange of technology-delivered courses.' He envisions a catalogue with listings from hundreds of institutions, corporations, and publishers, giving students ready access to thousands of educational opportunities" (Blumenstyk, 1998A: A23).

Once it opens more broadly in the coming months, the WGU will push other regions toward this model, as one already sees with the Southern Regional Electronic Campus and the California Virtual University.

This model of higher education already has many devotees. Beneath it, the state would elect to end its financial support for state university systems, seeing them as bastions of "a feudal system" for outmoded guild privileges, and to shift its financial backing to systems of individual choice, giving students vouchers to spend where the marketplace and competency

regime show the best education can be had. Beside it, the market could balloon for savvy public-supported or clever for-profit privately-backed institutes of higher learning, building off of popular frustrations with high taxes, elitist universities, and declining degree values. And, behind it, business supposedly would find many more skilled workers faster, cheaper, and easier than it does now, and at a lower cost, as WGU-styled educational consortia reduce the need to pay for expensive public university systems. The real innovation of the WGU is this new symbolic economy of academic achievement, moral economy of personal choice, and public economy of lower costs.

The WGU model of building a virtual university is so unfortunate, because it seems purposely devoted to developing substitutes for traditional public and private universities by undercutting their missions of liberal education, civic socialization, and universal enlightenment with narrowly focused labor force training agendas. Instead of inviting traditional universities to reform themselves from within, the public sentiment behind the WGU pushes competitive marketplace pressures onto the university campus to compel academics to make change. This model may work, but it also might destroy many qualities of university life that have made it so innovative for the economy and society at large. Fortunately for now, the WGU lacks a great deal of credibility: it comes from the weakest, newest, and most powerless part of the US, or the Mountain West. Not one of its member institutions is considered a top-tier school in teaching

or research, and only two small, regional state universities--Northern Arizona and Washington State--have representatives on its governing board. In many ways, it is more a "virtual junior college," than a virtual university.

Other states and traditional universities, which do not want to forsake their sovereign mission or historical roles, can, nonetheless at the same time, learn something from the WGU virtual university, and begin to apply it in their own policies and programs as a supplement to, instead of a substitute for, traditional modes of F2F education. These moves might add something new to existing styles of teaching, serve new constituencies of place-bound over-25 students, and provide higher quality academic credits, degrees, and lessons to a changing marketplace before commercial providers make more inroads into this vitally important dimension of our collective life.

#### **IV. More Markets, More Questions**

Most dimensions of life connected to economic production, as the WGU indicates, have been colonized and captured long ago by instrumental rationality and the logic of commodification. The world of work and circuits of consumption see competitive markets setting their exchange value, and defining, in turn, the practical standards for their business operations. Even so, there are spheres of existence still relatively untransformed by such forces, and most of them lie in the dimensions of cultural reproduction. While there are obvious exceptions to these rules,

many people still believe that family life, religious faith, artistic work, national identity, and general education should not be subject to the same naked relations of modern buying and selling out in the marketplace. And, when such relations do occur, they often are associated with poor quality, bad taste or even fundamental immorality.

Strangely enough, however, distance education has been one area where these negative associations are often made, but not always and usually for the wrong reasons. On-line teaching is a fast growing distance education mode, but, as the WGU's plans show, it usually is pitched at "mature" students beyond the typical 18-23 year old market. On-line teaching arguably is best suited for the life-long learning student, and the acceptance of it has increased as the proportion of these members of the student body has grown. In 1972, 28 percent of college and university students were over 25, a figure that rose to 34 percent in 1980, and 41 percent in 1994 (Gubernick and Ebeling, June 19, 1997). Consequently, there has been an explosion of distance learning in the 1990s. During 1993, Peterson's College Guide listed 93 schools with on-line courses available for enrollment. 1997's edition tallied up 762 such institutions, and over 1 million college and university students are taking on-line courses as opposed to 13 million in traditional contact institutions (Gubernick and Ebeling, June 19, 1997). Merely meeting these mounting needs, however, is not what distance learning is about.

#### A. Distance Education as Market Thinking

As Forbes confidently asserts, "Modern technology brings education to the students rather than forcing students to subsidize fancy campuses and feather bedding faculties (Gubernick and Ebeling, June 19, 1997: 3). Once liberated from such overdone sites of subsidy, in turn, Forbes also believes students "will willingly dispense with the beer drinking, dating, and fellowship" of on campus life, because "the aim is to deliver a basic product at a reasonable price" (Gubernick and Ebeling, June 19, 1997: 4). Here education as labor force training is being substituted for personal liberation and social cultivation in the assumption of delivering "a basic product at a reasonable price."

Business wants it both ways. First, it knows higher education, as even the Education Commission of the States found, is one of the top two or three priorities of most political jurisdictions (Schmidt, 1998: A38). Still, it does not want to pay taxes to cover these social overhead costs, because it serves the interests of its profits. And, second, it still needs a skilled workforce equipped with basic, reasonably priced education to run its firms and factories. Hence, it agrees with Milton Friedman that universities could dispense with athletics, research, and student services and provide cyberstudents a degree "at a fraction of the cost of attending a traditional Ivy League college" (Gubernick and Ebeling, June 19, 1997: 4). In turn, the upper crust can then send their offspring to expensive, contact institutions, like Princeton, Yale or Harvard, to get the best

education that face-to-face contact can buy without interference from the working classes.

The capitulation of many higher education outlets to the marketplace leaves the original mission of modern universities hanging in limbo as state governors, university governing boards, and sometimes even the public increasingly expect different outcomes from a college education. The purposes of civic Bildung required by Alexander von Humboldt or the freedoms of liberal learning hoped for by Cardinal Newman are being trampled in the quest to retrain "the labor force" to suit the corporate sector.

As Governor Paul E. Patton of Kentucky, chair-elect of the Education Commission of the States, asserts with regard to college graduates, "we have businesses demanding a product that, in many cases, they are not finding....It's not that we're doing a bad job. We're just not doing enough" (Schmidt, 1998: A38). A recent survey of thirty-five governors by the Education Commission discovered that these chief executives believe most colleges and universities are unresponsive to state needs, faculty tenure should not be protected, and research that offers no clear benefit to the state ought to be halted. Speaking about these issues with some apparent omniscience, Kay M. McClenny, the vice-president of the Education Commission, said the governors were drawing distinctions between academic research "that is fundamentally important and to society versus the stuff that is generated to promote tenure" (Schmidt, 1998: A38).

In this zone of active antagonism to liberal education and

academic freedom, the allegedly inefficient dimensions of education are being redlined for sacrifice to create savings and improve services. Under the banner of accountability, higher education is being pushed into the service of the corporate sector, making economic productivity, consumer satisfaction, and growth promotion the sine qua non of effective university policies. And, to accelerate these market-building changes, greater marketization is being pushed upon university administrations and faculties. Indeed, 37 percent of state governors agreed that Microsoft or Disney ought to be encouraged to compete with colleges and universities (Schmidt, 1998: A38). All of the governors polled by the Education Commission of the States believed "colleges should be held more accountable for meeting state, local, and regional needs, and nearly all thought it was important for states to link spending on colleges with institutional performance, put more emphasis on faculty productivity, give students incentives to pursue careers in certain fields, and reorganize sectors of education into a seamless system covering kindergarten through the first two years of college," while, at the same time, helping to stimulate "competition among higher-education institutions and between the field's private and public sectors, have colleges collaborate with businesses in developing their curricula, and integrate applied or on-the-job experiences into academic programs" (Schmidt, 1998: A38).

This structural shift toward the virtual university releases

some of its momentum in existing colleges and universities, pushing digital discursive tools and electronic documents into the everyday practices of teaching, departmental administration, and professional academic research. At Virginia Tech, all faculty are given new personal computers every few years in exchange for sitting with educational technologists in a series of two, three or four day workshops, at UCLA the Instructional Enhancement Initiative is building web pages for every course at the university, and at the University of Florida all 42,000 of its students will be required to have personal computers in the 1998-1999 academic year (Young, 1998: A 29; and, McCollum, 1998: A27-29). These specific initiatives are illustrations of how shifts in university technocultures are being backed by institutional programs to transfer new techniques and tools to those who need to thrive in the emergent technoculture.

Yet, few realize how these are neither one-time expenditures nor finished projects. Instead, these strategic decisions are structural reorientations in the manner of professional work, the mode of communicating knowledge/information/wisdom, and the matriculation of students at American universities. Not all of the critics' charges are unwarranted, but the substantive managerial prejudices tipped in favor of business, the willingness to let private sector solutions rule simply because they are privately exercised, and the dangerous acceptance of businesses designing curricula are all marks of a simplistic ideology at work inasmuch as there is little sign of any reasoned

analysis of the facts. The globalization of business over the past fifty years is not a story in which private entrepreneurs worried much about the civic life or moral autonomy of those they were selling to, buying from, or leaving behind in search of profit. Allowing business to set the standards for intellectual activity will quickly lead to liberal learning, individual autonomy, and cultural Bildung being written off as inefficient, unproductive, and wasteful. And, while graduates might be less ill-prepared for the labor force, they will be essentially unprepared for the rigors of their civic life or personal development during their days in the working class.

B. Naive Instrumentalism vs. Paranoid Anticommercialism

Worries about employment levels and job control at the virtual university are very valid concerns for professors, especially given all of this raw market rhetoric; but, it is not clear that technology per se is causing employment to be lost or personal autonomy in the workplace to be abridged. On the one hand, it is evident that tenure-track employment levels have been declining as university administrators hire more part-time and non-tenure track professionals out of the swelling contingent labor force of PhD-holding workers. AAUP figures from 1995 indicate that the proportion of the professorate working on non-tenureable contracts rose from 19 percent in 1975 to 28 percent in 1995, while tenure track contracts fell from 29 percent to 20 percent in the same period (Wilson, 1998: A12). Overall proportion of tenured professors held constant at 52 percent in

1975 and 1995, but the number of non-tenure track professors working full time nearly doubled from 1975 to 1995 as the number of full-time tenure track professors fell 12 percent (Wilson, 1998: A12). Part-timers and non-tenure track talent is estimated at 42 percent of all instructors nationwide in 1998, while this figure stood at only 22 percent in 1970 (Wilson, 1998: A12). On the other hand, however, these figures show that tenure track employment has been eroding dangerously for nearly three decades, and at this point technological innovations cannot be blamed for causing this tendency. Still, the willingness to use part-time and tenure track employees to save money also comes with a willingness to pressure them into utilizing these technologies in their work. David L. Potter, provost at George Mason University, notes "we get a lot of energy out of non-tenure track people," and "these people come cheaper than a tenure-track hire" (Wilson, 1998: A14). Because they work for less, have no job security, and are entitled to no academic freedom, these kinds of workers can be expected to adapt themselves to technology-intensive teaching in which they might merely tend software structures, contribute nothing creatively to the teaching mission, and conform to someone else's standardized curriculum.

The job control issue is one that can cut both ways with technologically enhanced teaching. At this juncture, before an extensive lock-in has had a chance to solidify, the first waves of innovators have tremendous opportunities to exercise extraordinary autonomy in a context of great ferment as they

experiment with many radical changes in the academy. Yet, the prospects of big money to be made here are mobilizing hardware, orgware, and software manufacturers. And, once their development contracts and production cycles lock many universities into using their goods and services, there will be much less personal control by professors over their workplaces. Even now, existing forms of on-line teaching are constrained by strict licensing agreements, intellectual property rights, rigid copyright rules, incompatible machine platforms, spotty ISP services, and bloated equipment interfaces, all of which lessen individual creativity and freedom in teaching.

This question is particularly significant in the 1990s because of the very hierarchical, top-down fashion in which most American universities are managed. Quite often, the higher central administration at any university is staffed by people who do not teach now, and may indeed have never taught. Consequently, virtually none of them have used digital teaching technologies, which have emerged for the most part only in the last five years, and only a few really understand what is involved in using them. Yet, these same administrators increasingly treat higher education as a business in which, as Mary Burgan, AAUP general secretary, says, "you hire and fire at will" (Wilson, 1998: A12). The stage, then, is set for people, like Wallace Loh, former dean of the College of Law at the University of Washington and now higher-education adviser to Washington's Governor, Gary Locke, to tout the "brave new world

of digital education" (Monaghan, 1998A: 1). On this new terrain, Loh believes higher education should undergo, and rightly so in his mind, "the same kind of rigorous reorganization that has taken place in health care-style in recent years" (Monaghan, 1998B: A23). With new technologies, and amidst a managed care style perestroika, Loh believes faculty at Washington's public colleges and universities could accommodate another 20,000 to 80,000 students by the year 2020 without a massive new infusion of resources, because they would essentially lose their job control and professional autonomy: "some could design course software, while others could teach or serve in traditional faculty roles" (Monaghan, 1998B: A23). Faculty at the University of Washington, who do teach and many times use this technology, are, of course resisting Loh's vision, arguing it strives to "carelessly echo corporate fads without taking into account the already downsized nature of the state's universities and colleges" (Monaghan, 1998B: A26).

Loh's celebration of cybernetic flexibility leads him down the road of "naive instrumentalism" as he touts the omnipotence of networks, claiming before the people of Washington state that "where you live--even if you live in Forks or Zillah--won't be a barrier to learning, because technology will make both teachers and knowledge available worldwide. So you might take a course from a university in Japan or China or Belgium" (Monaghan, 1998A: 3). Loh's naivete here is considerable, but it displays quite aptly the unconscious equation of more technology with more

personal choice, additional market variety or greater instrumental control. The fact that technological availability itself can be a barrier, where you live is purposely organized to be a barrier to many things, and worldwide access for a few is going to be another barrier for the many escape Loh's consideration because it would make his "brave new world of digital education" seem to much like the cowering old world of F2F learning. Other academics, like former banker and now Michigan State University president, Peter McPherson, actually welcome these tendencies as unavoidable natural events because of market pressures: "every sector of business that has gone through this struggle has always said 'we can't do it.' That's what health care said, that's what the automobile companies said. But the markets do work, and change does come" (Forbes, June 19, 1997: 3). Even though he does not teach this way himself, Peter Drucker also signs off on market momentum as necessary and inevitable. "Universities won't survive," Drucker asserts, "the future is outside the traditional campus, outside the traditional classroom. Distance learning is coming on fast" (Forbes, June 19, 1997: 1).

All of this may be true, but it also displays a high level of naive instrumentalism with regard to teaching, learning, technology, and tradition. Because computers are being used, as with health care, automobile manufacturing, or business at large, higher education is assumed to be just another business, when it is clear that it is not. Even so, voices like Loh's, McPherson's

or Drucker's naively claim that the instrumentalities of computers can be used to only create greater efficiency, flexibility or productivity. And, once this occurs, everything will otherwise more or less remain equal. In other words, instruments only do what we believe they will and/or what we direct them toward doing. Yet, all indications are that these expectations are false.

Loh's utopian vision of transnational education, for example, is technically feasible, but also socially and culturally subversive. Education is about social reproduction: being a Belgian, Chinese, or Japanese immediately becoming problematic if Belgians are teaching Chinese, Chinese instructing Americans, and American professing before Japanese. For some it might seem like the pedagogical foundations of Kant's perpetual peace, but the WWW home pages of most right wing extremist groups argue that this is the mark of the beast: the advent of the New World Order. Business might want all of them buying the basic products of workforce preparedness, but Belgians, Chinese, and Americans have wanted to teach something extra: Belgian culture, Chinese civilization, American democracy. The technology and the marketplace will flush this all in favor of performativity or more employable skills.

Drucker's ideological attachment to markets and technology ratifies this change: the future is outside, beyond, ahead of the "traditional" campus and classroom. Perhaps, but then again those places are technologies, too, and what has been going on

there is civic cultivation, personal liberation, cultural development. For some, athletics is a form of individual subjectivity to cultivate a type of moral agent, political actor, and team player, and for others research has been an effort to constantly redynamicize human cultural development. So Friedman's naive instrumentalism verges upon the tacitly totalitarian vision of many economists, once again, knowing best what all other humans need, want or desire. Distance learning is coming on fast, but these anti-intellectual dismissals of the university are quite distant from what has been understood as real learning. Indeed, like McPherson, these analyses turn degrees into basic commodities, like station wagons, hamburgers, or full hospital beds, and then pontificate about how their provision must follow the same modes of production as GM, McDonalds, and Columbia HCA.

The reality of the commodification mindset suffusing American higher education cannot be denied, especially in the face of declining public support and government funding. A quick pass through recent issues of The Chronicle of Higher Education reveals this national forum for some collective consideration of the university examining "boom times" for the for-profit higher education industry (Strosnider, 1998: A36-38), the grip of Microsoft on college and university information technologies (The Chronicle, April 24, 1998: A27-34), visions of profit with digital presses from university libraries (Guernsey, 1998: A27-18), and the struggle over property rights as well as profit

potentials in the development of on-line courses (Guernsey and Young, 1998: A21-23). We live in a capitalist society after the end of the Cold War, and it seems unlikely that the marketplace as a general background condition will collapse in the near future. Nevertheless, this does not mean that everything is now, or should be in the future, a commodity.

Just as one ought not to be seduced by these visions of neutral utopian necessity in the naive instrumentalist reading of computer-mediated communication, so too should one not fall victim, like David Noble, to a position of "paranoid anticommercialism" in which anything digital is superefficient capitalism at work. Computers, in fact, can change everything; and, if you do not believe that it will, then simply listen attentively to what often quoted enthusiasts like Loh, Drucker or McPherson claim. Once brought on-line, education on-line will burst on the academic scene in a big way, but not necessarily at a profit. Many universities in the USA have economic development officers, corporate research parks, sponsored research administrators, intellectual property attorneys, and patent procurement personnel already hard at work transforming faculty into producers of product. So Noble's plaintive call to resist commodification now, because it might erode the "independence and job security of the faculty" (Young, 1998A: A29) clearly is many days late and a few dollars short.

Again, in not apparently having taught this way himself, Noble fails to see how noncommodifiable much of human knowledge

actually is. In practice, most universities are finding Forbes' ideological incantations about intrinsic efficiencies in computer based technologies to be utterly wrong-headed. Digitalization costs more, not less. It takes more people, not fewer. Optimal class size on-line often falls, not increases. Computer technology is a rapidly obsolescing permanent cost, not long paying investments. Students must work more, and far actively, not less and much more passively. Hence, most distance learning is heavily subsidized, like Third World country airlines or the Soviet military units, by other on-campus activities, and it cannot face successfully a rigorous audit. Yet, at the same time, naive instrumentalism from above and the right ought not to be met only by paranoid anticommercialism from below and the left. Just as Jeremy Rifkin has emerged as the bete noire of the biotechnology industry, David Noble, a noted historian of technology from York University in Toronto/Ontario, is being pumped up into a knee-jerk critic of all on-line teaching per se after attacking UCLA's recent efforts to institute a "one course, one web page" program of computerization (Young, 1998B: A31).

In an WWW essay, Noble (1997) attacks all digitalization efforts as nothing but purposive exercises in commodification by university administrators to sell on-line materials on the open market. At a conference convened in May 1998 at Harvey Mudd College in Claremont, California, Noble declared "it's high noon for higher education," because digital technologies boil down to a "transformation of faculty into producers of product" (Young,

1998A: A29). The World War/Cold War grant getting games of the 1914-1989 era long ago transformed universities and their faculties into producers of product. This process was far advanced in 1994 when the WWW was insignificant; it did not suddenly begin only then in strictly marketplace terms. Consequently, the paranoid anticommmercialism of people like Noble is misplaced. Digitalization is another sign of deeper changes already afoot before Netscape's advent, and it represents a bigger shift in contemporary learning cultures than the commodification agendas that have poisoned university life since at least the stagflation days of the 1970s.

Of course, digitalization will advance new waves of commodification in knowledge production, ranging from massive digital library technologies to tiny desktop courseware packages.

Even though it is unclear who will buy such goods, and while there are thousands of competing providers with the same product, "the growth of distance education and the widespread use of multimedia course materials have convinced some administrators and faculty members that they're sitting on gold mines" (Guernsey and Young, 1998: A21). The future that Noble fears is possible, but the present is one in which development costs, legal confusion, bandwidth constraints, cultural inertia, and uncertain profits all stand in the way of much rampant economic success. Markets are markets, as Noble and Drucker both note in their own ways, but markets for art, gold, stocks, currency or weapons all behave very differently in the abstract, much less concretely in

Norway, Iran, Thailand, or Brazil. Digitalization will lead professors to produce product, administrators to claim ownership, students to purchase use rights, companies to distribute access, but it is not at all clear that this commodification will revalorize contingent investments sufficiently to recover any overhead, much less turn back serious points on margin. And, if it does, it will happen very differently at various schools in many different places.

Critiques like Noble's run afoul of an assumption of "Disneyfication." On the one hand, there is an alliance of hardware, software and connectivity providers who want to transform education into product through expensive multimedia production. This can occur, and there are efforts afoot to work wonders for learning, particularly for the K-12 market. In the future, there might be enough basic bandwidth and installed equipment to make this workable everywhere, but this is not true now. On the other hand, on-line learning already has been developing at universities for five years using much more basic and inexpensive techniques to generate a new mix of active telepresence, asynchronous interactivity, and on-line community through demanding forms of digital discourse. These approaches must adapt to the limited bandwidth, often antiquated equipment, and basic user skills actually existing now. So, most on-line learning is commoditized neither thoroughly nor effectively, because it assumes a level of user coproduction that evades Disneyfied commodification. Even Disney has discovered this

reality out in the education market at its new Celebration centers in Florida where it once aspired to teach life-long education courses in quite substantive areas of study. Almost no one took them, so Disney is back to teaching French cooking, music appreciation, and watercolor painting.

#### **V. The Virtual University and Performativity**

Having said all of this, the new university technocultures of on-line learning still are markers of major cultural, economic, and political change. The development of digital domains on-line erodes the sovereign authority and exclusive territoriality of nation states by reconfiguring the entire globe into a vast internal market for mobile, flexible networks of transnational capital. While it is not "friction-free," Lyotard suggests, "economic powers have reached the point of imperiling the stability of the State through new forms of the circulation of capital that go by the generic name of multinational corporations," and these new modes of circulation "imply that investment decisions have, at least in part, passed beyond the control of the nation-states" (1984: 5). These capital formations, in turn, allow private interests to contest public authorities in a continual contest within cyberspace over "who will know" as telematic technologies "make the information used in decision making (and therefore the means of control) even more mobile and subject to piracy" (Lyotard, 1984: 6).

Such on-line resources are growing so pervasive that bits are becoming measures of value, power, and knowledge. In the

telemetries of cyberspace, knowledge begins "circulating along the same lines as money, instead of for its 'educational' value or political (administrative, diplomatic, military) importance; the pertinent distinction would no longer be between knowledge and ignorance, but rather, as is the case with money, between 'payment knowledge' and 'investment knowledge'--in other words, between units of knowledge exchange in a daily maintenance framework (the reconstitution of the work force, 'survival') versus funds of knowledge dedicated to optimizing the performance of a project" (Lyotard, 1984: 6).

Fabricating these digital domains, and then continuously struggling to master their telemetrical terrain, fulfills Lyotard's prophecies about "the postmodern condition." That is, "knowledge in the form of an informational commodity indispensable to productive power is already, and will continue to be, a major--perhaps the major--stake in the worldwide competition for power," in fact, the struggle over cyberspace intranationally and transnationally illustrates how fully the residents of nation-states must fight for "control of information, just as they battled in the past for control over territory, and afterwards for control of access to and exploitation of raw materials and cheap labor" (Lyotard, 1984: 5). Today, data/information/knowledge in telematic forms, on-line and off-line, "is and will be produced in order to be sold, it is and will be consumed in order to be valorized in a new production: in both cases, the goal is exchange" (Lyotard, 1984:

4). In another register, Negroponte continuously puffs up the potentialities of this change as "being digital" (1995: 11-20), which leads to a celebration of digitalization as the latest grand moment of modernization. The shift from a society organized around making and moving matter, or "atoms," to one focused upon inventing and integrating information, or "bits."

In this fast capitalist economy, everything in society, the marketplace, and culture,

...is made conditional on performativity. The redefinition of the norms of life consists in enhancing the system's competence for power. That this is the case is particularly evident in the introduction of telematic technology: the technocrats see in telematics a promise of liberalization and enrichment in the interactions between interlocutors; but what makes this process attractive for them is that it will result in new tensions in the system, and these will lead to an improvement in its performativity (Lyotard, 1984: 64).

The social pragmatics of performative capital slowly supplant a deeply embedded metanarrative of grounded social contracts once set-in-place with the loosely defined just-in-time protocols of fluid temporary arrangements. The impermanent understanding of personal and social identity in such transnational markets is now favored "due to its greater flexibility, lower cost, and the creative turmoil of its accompanying motivations--all of these factors contribute to increased operativity" (Lyotard, 1984: 66).

These observations from Lyotard provide a much needed frame of reference to place around the project of computer-mediated distance education. For better or worse, the mode of information as well as the mode of production are reshaping rapidly and rawly

the mode of instruction. The acts and artifacts that anchored traditional technocultures of teaching are being supplemented by those developing in new technocultures--both on campus and off, during work hours and after, in disciplines and outside of them.

Too many enthusiasts for the use of computers in teaching get stuck on their machines at home when, in fact, no machines stand alone and apart from these larger changes in companies, markets, states, and societies all over the world.

The eclipse of national territoriality by transnational telemetry follows from the "omnipolitanization" of the planet Earth over the past two or three decades of global capitalist development. Omnipolitanization flows from the hyperconcentration of urbanized values and practices in a "world-city, the city to end all cities," and "in these basically eccentric or, if you like, omnipolitan conditions, the various social and cultural realities that still constitute a nation's wealth" give way to unsettled impermanent forms of community in which many social forms of exchange "will no longer look any different from the--automatic--interconnection of financial markets today" (Virilio, 1997: 75). In keeping with Jameson's explorations of postmodernity, omnipolitanization "is what you have when the modernization process is complete and nature is gone for good" (1991: ix). Economy and society, culture and politics, science and technology assume the qualities of an artificial second nature with their own time within/over/beyond the now lost rhythms of first nature's geophysical time and

space, which are now long gone in the dust of multiple modernizing projects. Economics and politics here, as telemetrical cyberspaces indicate, are increasingly unhinged from fixed social formations (Rifkin, 1995).

After learning on-line, and then working on-line, those who collaborate culturally, economically, and politically in the collective construction of actual transnational communities in telematic telemetries may, in turn, not necessarily hold as dear their nominal nationality within traditional territorial space (Reich, 1991). Instead, they increasingly slip into other organizational registers. Once there, in many on-line applications, where telematic time and space let them work and live virtually, they often become co-accelerant, com-motive, or con-chronous agents of fast capitalist firms, digital design alliances or performative professional groups. Moving from the spatio-temporal perspectives of territoriality to the acceleration effects of instant communication, "all of Earth's inhabitants may well wind up thinking of themselves more as contemporaries than as citizens; they may in the process slip out of the contiguous space, distributed by quota, of the old Nation-State (or City-State), which harbored the demos, and into the atopic community of a "Planet-State" that unfolds as "a sort of omnipolitan periphery whose centre will be nowhere and circumference everywhere" (Virilio, 1995: 36). Individuals, in turn, may judge their personal success in these omnipolitan spaces more often by the goods and services shared by the other

"successful fifth" of global coaccelerants than by the condition of the "failed four-fifths," who while they still are their coinhabitants in some fixed place, they are no longer commotive contemporaries riding along with them on the fast capitalist tracks in polyglot global flows (Reich, 1991).

This more borderless world of digital exchange also constitutes a standing invitation for all to become even more "orderless" as such technoeconomic flows displace once heavily enplaced social formations and individual activities. As one of the key architects of these changes asserts, the most rational form of global order will be one of completely un-stated (b)orderlessness. Echoing Governors Leavitt's and Romer's hopes for the WGU, the state apparatus, either on-line or off-line, should do nothing to retard global flows. It should instead serve as an accelerant, changing its services from a civic national to a private nodal focus "so as to: allow individuals access to the best and cheapest goods and services from anywhere in the world; help corporations provide stable and rewarding jobs anywhere in the world regardless of the corporation's national identity; coordinate activities with other governments to minimize conflicts arising from narrow interest; avoid abrupt changes in economic and social fundamentals" (Ohmae, 1990: appx.).

## **VI. Epilogue: Digital Technoculture**

Universities, like all social institutions, embed their practices in very specific technologies and cultures in order to

produce the goods and services of teaching, research and service.

Thousands of people must master a particular technical know-how and share certain cultural meanings made manifest in many different acts and artifacts for any university to function effectively. Digitalization represents a profound change in the technologies that many people have used to perform their work at universities, and the cultural assumptions used to operate in pre-digitalized environments will not necessarily mesh well in digital systems of operation. On-line education represents a major cultural transformation in university technocultures, but, as this analysis suggests, it is only one part of many larger social shifts toward digital discourses, documents, and disciplines as print is being supplanted by code in the generation, circulation, and utilization of information.

Discussions of technology and education all too often become bogged down in purely technical analysis of the means-ends calculations involved in getting more academic content out to students faster, cheaper, better. While such debates have merit, they miss the bigger questions of power and knowledge implied by the mobilization of new technologies in the educational process.

Know-how about know-how is one of today's most important forms of power, and education about education is a key form of knowledge. A sophisticated awareness of these linkages soon discloses a great deal about variations in any given group of individuals' overall life changes, relative wealth, and power potential. Likewise, a decision to use this technology here

rather than there or that technology later instead of now in educational settings often expresses cultural preferences, economic realities, and political expectations about individual values and collective goals in quite suggestive ways.

Consequently, these decisions are central rather than peripheral to the workings of contemporary economies and societies, and they need to be considered very seriously.

Disembedding education from its traditional sites and styles of provision, of course, immediately raises the problem of commodification. Yet, one already confronts the commodified qualities of higher education at the start of every academic year in evergreen newspaper stories about rising tuition costs or on personal finance TV segments about monthly savings programs to finance a college degree for new babies. A college education has been neither mandatory nor free in the United States, and, as a discretionary purchase, it has had commodified qualities for a very long while. Nonetheless, a college degree has also been a fairly immobile bundle of interconnected, place-dependent goods whose benefits were derived from an extended stay with a specific faculty to be exposed to their unique curricular programs of study, which culminated as a completed educational transaction with the student winning a degree. Money was paid and work was performed to convey education services, but these services are difficult to quantify or classify apart from a degree. The degree, as a commonly accepted credential, is what represents, guarantees, and denotes education attained, making its

commodification a very unwieldy, often nonfungible, and basically a quite complicated process.

On-line education, however, as the WGU illustrates, can work on entirely different planes with many more discrete instructional units in a register of valorization tied to individual competencies rather than university degrees. Here some regime of competency testing and certification might define knowledge bits, skill sets, and functional abilities in ways that specific short courses of study could capture and then transmit to learners. Then a standard certification system would validate their competency rather than a university faculty and administration attesting to some vague ideal of education with a degree that has been conveyed to the student after two, four, six or eight years of study.

At the WGU, what was an imperfectly commodified product now can circulate more freely and widely, and the political economy of each of its learning packages changes significantly. Who owns it, who produces it, who uses it, what valorizes it, what certifies it, what sells it, why fund it, why continue it, and why protect it? These are all questions raised by the new practices of on-line teaching. The continuing drift toward greater individualization and broader globalization, as Beck argues, does provide a new impetus for competency regimes and personal certification in discrete skills. Still, the enduring interest in grounded collective identities with deeper cultural localization supports the disciplines of degree winning in more

universal traditions of learning. Nonetheless, the proliferating possibilities for choice from so many on-line menus of learning will challenge any institutional solution to this problem as students mix-and-match courses of study from many different places, and then either ask to include them in programs of study for degrees or appear before competency boards for skill certification.

Without being as apocalyptic about it as Birkerts is, the process of digitalization itself, apart from and beyond commodification, does bring a fundamental transformation in many fixed forms of being. With the advent of computer-mediated communication, "the primary human relations--to space, time, nature, and to other people--have been subjected to a warping pressure that is something new under the sun....We have created the technology that now only enables us to change our basic nature, but that is making such change all but inevitable" (1994: 15). This change is caused by the move from printed matter to digital bits to accumulate, circulate, and manipulate stores of knowledge. There are, as Turkle (1996: 17) claims, different "interface values" embedded in each particular medium, and those embodied in print inculcate a special measured, linear, introspective type of consciousness that have anchored our understandings of higher education for several centuries.

Inasmuch as digital libraries with their own digital discourses, documents, and disciplines supplant libraries of print, a remarkable erasure of experience can indeed occur.

Again, Birkerts asserts:

our entire collective subjective history--the soul of our societal body--is encoded in print....if a person turns from print--finding it too slow, too hard, irrelevant to the excitements of the present--then what happens to that person's sense of culture and continuity? (1994: 20).

Shrewdly enough, Birkerts recognizes his worries and warnings are overdetermined questions, leaving no one effective path to take one strand of the question out at a time for easy analysis.

Instead we are left with a sense of profound loss and immeasurable gain as the popularity of digital modes of communication builds and spreads. Without succumbing to Birkert's fears that everything changes unalterably, when it is run through electronic circuitries, and mostly for the worse, we should realize in the same moment that everything will not remain the same only now in silicon instead of on paper. Along the fractures of this faultline, what is new and different in digitalization must be found so that we might address what impact it will have upon the technoculture of universities.

No technology exists simply as such with its own immanent dynamics separate and apart from the declared and implied uses for it. Some of these might be unintended and unanticipated, but they too derive from human use. On-line learning today represents a cluster of technical applications that has been invested with special importance and power. One does not need to visit EDUCOM's or CAUSE's websites to witness computer-mediated communication talked up as being truly representative of "the

coming change," "high tech alternatives," or, most starkly, "an inevitable future." All of this may be true, but only if people, singly and in groups, do many things to turn such collective anticipation into lived actuality. Quite often, other forces in government, big business or the professions will steer the realization of the future in particular directions, and the current mythos of computerization typically connects the technologies of on-line learning to high paid jobs, the world of work or national competitiveness. This collective of causal forces cannot be ignored in on-line learning; a quick glance at the agendas of EDUCOM or CAUSE immediately confirms this observation. Nonetheless, these technologies clearly can support cultural pursuits beyond the world of work and apart from the conduits of commerce, particularly if people consciously organize them to serve these ends. But, here again, which people, where, and for what purposes are questions that are still open.

While all of these possibilities for cultural enhancements do exist, there are no assurances that every course in an on-line format will feature any or all of them. Moreover, as Neal suggests (1998: B4-5), there is no systematic appraisal of how, why or when multimedia techniques actually improve learning beyond the "gee whiz" satisfactions of high technology in operation. Here doing it at all usually is taken as a qualitative improvement, because no one else is doing much of it, and it therefore looks, feels, sounds so different. Being astounded, however, is not the same thing as actually making

improvements, and being different can also not work out well. Consequently, a truly radical rethinking of educational discourse in a digital register, which relies upon on-line classes and electronic documents, is needed in order to develop guidelines for a new university technoculture. Until and unless we understand how digital discourses do what they have done in learning or improve what has been done in teaching, two unsavory outcomes will continue: neo-conservative questioners of virtual universities like Birkerts will continue to be heeded, and neo-liberal reformers like Governor Leavitt of Utah will persist in pushing his vision of the virtual university against traditional learning. Both developments are an invitation to learn more about everything that we do in cyberschools so that we might teach more effectively in defense of what is worth defending.

To say this, however, is not enough. In a context that militates against anticipating the nature, direction, and impact of change, we must try to think through the implications of digitalization upon the economy and society, culture and government, individual and group. The containment fields, information banks, and energy sources constructed around print since the fifteenth century are being put into question by digital discourses, on-line communities, and electronic documents, despite what the proponents believe they are doing with computers alone. Very few voices are raising issues of this sort, but these questions need to be considered and coped with before their unintended consequences derail or disable some of

the positive changes that might arise out of these transformations. The virtual university is a perfect place for academics to enter these discussions. Who builds it, how is it built, why it will be built, and where it is built are all questions whose answers will reshape academic life and the larger societies served by virtual universities in the years to come for better and for worse.

To conclude, there are many ironies and inconsistencies at work in learning on-line. At one level, getting more computers into the classroom is only about that, and advancing or retarding that change will help or hinder students in today's economy once they graduate. Yet, at the same time, making these changes, reconfigures settled patterns of behavior and thought--both on and off campus--about what a university education ought to be about, and how it should be attained. Once these reconfigurations slip into or out of place, depending upon one's expectations, everything else from the marketplace out beyond the classroom abruptly intrudes into view.

So, at a second level, building the virtual university, either as a supplement to or substitute for traditional universities, plays with the issues of modernization and markets as one reshapes, or refuses to reshape, teaching around new computing technologies. To resist computers, one does, at the same time, try to stop the growth of campus computing and also resist, if only for a moment, the advance of an immense informational economy. This seems to validate the claim that

universities are only bastions of feudalism opposed to any change. Yet, to advance computerization, one will, at the same time, assist the informationalization of economy and aid, if only in some small way, the proliferation of marketized behaviors where it may be inappropriate and unwanted.

Likewise, in an institution that values enduring collective traditions, like the university, computerization ironically is a mechanism for accentuating greater individualization through relations tied to one student, one computer, or, one learner, one node. Yet, for an institution that also promotes individual achievement, computerization can be a tool for accessing other dimensions of many collective traditions through relations of grounded in different cultures, different networks or many collective identities, many websites. In the final analysis, modernization is neither a unimodal nor a unidirectional event, and learning on-line should be able to develop along many different paths in responding to its pressures, which can preserve and elaborate upon its traditional missions of personal liberation and civic cultivation without submitting entirely to the dictates of excessive commercialization.

## References

- Anderson, Benedict. 1991. Imagined Communities, rev. Ed. London: Verso.
- Beck, Ulrich. 1992. The Risk Society. London: Sage.
- Birkerts, Sven. 1994. The Gutenberg Elegies: The Fate of Reading in an Electronic Age. New York: Fawcett.
- Blumenstyk, Goldie. 1998A. "Western Governors U. Takes Shape as New Model for Higher Education," The Chronicle of Higher Education, XLIV, no. 22 (February 6), A21-24.
- Blumenstyk, Goldie. 1998B. "Utah's Governor Enjoys Role as a Leading Proponent of Distance Learning," The Chronicle of Higher Education, XLIV, no. 22 (February 6), A21-24.
- Bowles, Samuel and Herbert Gintis. 1976. Schooling in Capitalist America: Educational Reform and the Contradictions of Economic Life. New York: Harper Colophon.
- Brockman, John. 1996. Digerati: Encounters with the Cyber Elite. San Francisco: Hardwired.

Cairncross, Frances. 1997. The Death of Distance: How the Communications Revolution Will Change Our Lives. Boston, MA: Harvard Business School Press.

The Chronicle of Higher Education. 1998. "Microsoft's Reach in Higher Education: A Special Report," The Chronicle of Higher Education, XLIV, no. 33 (April 24), A25-34.

Deibert, Ronald, J. 1997. Parchment, Printing, and Hypermedia: Communication in World Order Transformation. New York: Columbia University Press.

Dizard, Wilson, Jr. 1997. MegaNet: How the Global Communications Network will Connect Everyone on Earth. Boulder, CO: Westview Press.

Foucault, Michel. 1979. Discipline & Punish: The Birth of the Prison. New York: Vintage.

Gubernick, Lisa and Ashlea Ebeling. 1997. "I Got My Degree Through E-Mail," Forbes (June 19).

Guernsey, Lisa. 1998. "Digital Presses Transform Librarians into Entrepreneurs," The Chronicle of Higher Education, XLIV, no. 37 (May 22), A 27-29.

Guernsey, Lisa and Jeffrey R. Young. 1998. "Who Owns On-line Courses?", The Chronicle of Higher Education, XLIV, no. 39 (June 5), A21-23.

Jameson, Fredric. 1991. Postmodernism, or the Cultural Logic of Late Capitalism. Durham: Duke University Press.

Lewis, T. G. 1997. The Friction-Free Economy: Marketing Strategies for a Wired World. New York: Harper Collins.

Luke, Timothy W. 1994. "Going Beyond the Conventions of Credit-for-Contact," <http://www.cyber.vt.edu/docs/papers.html>

Luke, Timothy W. 1989. Screens of Power: Ideology, Domination, and Resistance in Informational Society. Urban: University of Illinois Press.

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

McCollum, Kelly. 1998. "'Ramping Up' to Support 42,000 Student Computers on a Single Campus," The Chronicle of Higher Education, XLIV, no. 28 (March 20), A27-29.

Monaghan, Peter. 1998A. "University of Washington Professors

- Denounce Governor's Embrace of On-line Education," The Chronicle of Higher Education [on-line version] (June 9).
- Monaghan, Peter. 1998B. "University of Washington Professor Decry Governor's Vision for Technology," XLIV, no. 41 (June 19), A23-26.
- Neal, Ed. 1998. "Using Technology in Teaching: We Need to " Skepticism." The Chronicle of Higher Education, XLIV, no. 41 (June 19), B4-5.
- Negroponte, Nicholas. 1995. Being Digital. New York: Knopf.
- Noble, David. 1997. "Digital Diploma Mills."  
<http://firstmonday.dk/issues/issue3.1/noble/>
- Ohmae, Kenichi. 1990. The Borderless World: Power and Strategy in the Interlinked Economy. New York: Harper and Row.
- Reich, Robert. 1991. The Work of Nations: Preparing Ourselves for 21st Century Capitalism. New York: Knopf.
- Rifkin, Jeremy. 1995. The End of Work. New York: Putnam.
- Schmidt, Peter. 1998. "Governors Want Colleges to Change to Respond to Economic Needs, Survey Finds," The Chronicle of

Higher Education, XLIV, no. 41 (June 11), A38.

Strosnider, Kim. 1998. "For-Profit Education Sees Booming Enrollments and Revenues," The Chronicle of Higher Education, XLIV, no. 20 (January 23), A36-38.

Turkle, Sherry. 1997. Life on the Screen: Identity in the Age of the Internet. New York: Touchstone.

Virilio, Paul. 1997. Open Sky. London: Verso.

Western Governors Association. 1997. "Smart States: Virtual University." <http://www.westgov.org/smart/vu/vu.html>

Wilson, Robin. 1998. "Contracts Replace the Tenure Track for a Growing Number of Professors," The Chronicle of Higher Education, XLIV, no. 40 (June 12), A12-14.

Young, Jeffrey. 1998A. "Skeptical Academics See Perils in Information Technology," The Chronicle of Higher Education, XLIV, no. 35 (May 8), A29-30.

Young, Jeffrey. 1998B. "A Year of Web Pages for Every Class," The Chronicle of Higher Education, XLIV, no. 36 (May 15), A29-31.

Young, Jeffrey. 1998C. "An Artist Unexpectedly Finds Herself Transformed into a Technology Advocate," The Chronicle of Higher Education, XLIV, no. 40 (June 12), A23-24.