[A slightly longer version of a paper published in *Crosstalk,* Winter, 1999.]

Distance Learning: Promise or Threat?

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My Adventures in Distance Learning

Once the stepchild of the academy, distance learning is finally taken seriously. But not in precisely the way early innovators like myself had hoped. It is not faculty who are in the forefront of the movement to network education. Instead politicians, university administrations and computer and telecommunications companies have decided there is money in it. But proposals for a radical "retooling" of the university emanating from these sources are guaranteed to provoke instant faculty hostility.

Today I find myself in the paradoxical position of defending my own understanding of distance learning against both its foes on the faculty and its advocates in the administration.

In 1981 I worked on the design team that created the first online educational program. This was the School of Management and Strategic Studies at the Western Behavioral Sciences Institute in La Jolla, California. The School offered courses taught by humanistic social scientists addressing major issues, such as globalization, environmentalism, urban planning, philosophy of technology, and so on. For nearly ten years, I helped with the operation of the School, trained teachers, and myself taught courses in it.

At the time online education was essentially untried. The equipment was expensive and primitive. We used Apple IIE's with 48K of memory and 300 baud modems. (Multiply by 1000 and 100 respectively to get current averages.) The complexity of basic computer operations in those days was such that it took a full page of printed instructions just to connect. A variant of email called computer conferencing was the only available electronic mediation.

Computer conferencing was suited to our application since it facilitated the sort of many-to-many communication that goes on in the classroom, but no one knew how to use it for education. None of us had ever been a student in an online class or seen one in operation, and we did not know the answers to the most elementary pedagogical questions, such as how to start a class, how long or short messages should be, and how often the teacher should sign on and respond to the students.

We soon discovered that computer conferencing was not very useful for delivering lectures, and of course it could not support any graphical contents, even the simple drawings teachers like to scribble on the blackboard. But these limitations led us to explore a Socratic pedagogy based on virtual classroom discussion that proved quite successful.

The school grew to include over 150 students in 26 countries around the world. It pioneered many of the features of online education taken for granted today. These include typical teacher and student roles and relationships, techniques for organizing discussion in a virtual classroom, ways of combining aspects of technical moderating and educational leadership, the use of informal chatting and "café" conferences, specialized client-server software, and and so on.

Other experiments soon benefited from our example and added their own contributions. Among the earliest were online classes at the New Jersey Institute of Technology, The New School for Social Research, The University of Arizona, Tucson, The Ontario Institute for the Study of Education, and the Open University in England.

These experiments were all championed by enthusiastic professors who involved their students in an adventure on the frontiers of technology. At first growth was slow, but in the last ten years online education has attracted much attention and seems well on its way to becoming a standard feature of the modern university. I am proud to have had a role in this development.

Consider, then, my surprise when I heard rumours last year that something called online education was coming to my university, San Diego State University, under the sponsorship of Microsoft, Hughes Aircraft, Fujitsu, and MCI! This initiative, called CETI, was supposed to build a $300 million information infrastructure to support virtual learning on our multi-campus system. Our classrooms and dorms were to be hardwired to the internet; we were to have video conferencing, various computer based teaching aids, electronic distance learning, and production facilities for marketable prepackaged courses to be sold by the CETI consortium for a profit.

CETI was opposed, sometimes violently, by most faculty and students. There were two main objections. First, both teachers and students doubted the educational value of networking, and second, some faculty members were upset by the commercial goal of CETI, the delivery of higher education through the market outside the context of a university community. What was once a daring faculty innovation had come to be perceived as a big business takeover of the campus.

I am no more enthusiastic about trading an academic job for one at Microsoft than the next faculty member, but this unqualified rejection of online education contradicts our experience at the Western Behavioral Sciences Institute. There the virtual classroom was a place of intense intellectual and human interaction.

Literally hundreds of highly intelligent comments were contributed to our computer conferences each month by both students and teachers. The quality of these online discussions surpasses anything I have been able to stimulate in my face-to-face classroom. As CETI became a common topic of discussion on my campus, I wondered why my colleagues did not share my interest in this innovative medium.

My puzzlement was soon to end. Our new systemwide Chancellor, Dr. Charles Reed, was due for a get acquainted visit. As he was leaving I finally had a chance to ask him the question that most bothered me: What is the pedagogical

model that has guided CETI? The Chancellor looked at me as though I'd laid an egg, and said, "We've got the engineering plan. It's up to you faculty to figure out what to do with it." And off he went: subject closed!

Would you build a house this way or design a new kind of car or refrigerator? Surely it is important to find out how the thing is going to be used before committing a lot of resources to a specific plan or design. Yet this was not at all the order in which our Chancellor understood the process. Why not? I would guess it is because he did not conceive of the technology of online education as a system, including novel pedagogical challenges, but as an infrastructure, an "information superhighway," down which we faculty were invited to drive. And just as drivers are not consulted about how to build the roads, so faculty were not much involved in designing the educational superhighway.

But this overworked metaphor is altogether inappropriate. In the case of educational computing, the choice of infrastructure will largely determine the applications. If corporations rather than faculty are consulted about this choice, the outcome will be entirely different from the ideal of educational community to which faculty are attached by their culture and traditions. The ambition of CETI to make and market computer and video based courses illustrated that difference.

The CETI story has a significant ending. Public outcry against it grew gradually as faculty and students protested on campus, in the newspapers, and before legislative committees. Legal and financial questions were raised about mixing public and private assets, and finally the companies pulled out one by one. The initiative collapsed and will now be replaced by a more modest plan paid for out of public monies, as is proper. The faculty will shed no tears over having to wait a bit longer for their first ride on the electronic *infobahn*.

Education and Economics

CETI teaches an important lesson about the different ways in which most administrators and faculty understand distance learning and its technology. I will try to sketch what I take to be these different perspectives. Of course generalizations such as those I am about to formulate do not apply universally, but it is a fact that the distance learning debate polarizes around two hostile positions that usually correspond to the different roles of administration and faculty.

For too many administrators the big issues are not educational. The fiscal implications of electronic distance learning are what is interesting to them. Aministrators hope to use new technology to finesse the coming crisis in higher education spending, and to accomodate exploding enrollments of young people and returning students. Innovations like video conferencing and automated online education will make it possible to improve quality through the use of "star" professors while cutting costs of delivery. Students in virtual classrooms need no new parking structures. What is more, courses can be packaged and marketed, generating a continuous revenue stream without further investment.

But can new technology accomplish the existing educational mission for larger numbers at a discount? Two main solutions have been proposed during the current wave of enthusiasm for distance learning.

Video conferencing allows a professor to address a large numer of students in remote locations. Live interaction can be supported by a two-way video feed. The physical presence of teachers and students in the classroom can be reproduced electronically at some cost but more students can be served without expanding existing campuses.

Automation offers a more radical solution with large start up costs but promising far greater savings in the long run. In an automated system, the teacher's physical presence in the classroom is reproduced on CD ROM or made available over the Internet. Exciting computer based graphical materials can replace dull textbooks. Research on the Internet can replace hours spent in libraries. Testing and grading can be done online. Even essay tests can be graded by powerful programs for textual analysis.

The key to automation is to separate out informational "content" from "process." A small number of well paid "content experts" will work as "star" performers, while the delivery process is deskilled so that inexpensive tutors can handle interaction with students. In a really low cost solution, discussion can be replaced by automated exercises. Eventually it will be possible to dispense with campuses altogether. Students will pick out courses at an educational equivalent of Blockbuster and "do" college at home without ever meeting a faculty member or fellow student.

Is this for real? Unfortunately many people think it is. Coopers and Lybrand have published a white paper in which they claim that 25 packaged courses can take care of half of community college and 35% of four year college enrollments. They are convinced that students will learn just as much if not more, and they will be free to study at their own pace. In educational terms, nothing fundamental will change except cost and convenience, those two favorite selling points marketers like to emphasize.

It's quite a vision, but few faculty buy it. Where administrators see educational "content" as the constant and economics as the variable, faculty see education as the variable and economics as the constant.

Most faculty cannot imagine simply reproducing the learning experience of a face-to-face classroom online. Distance learning, like it or not, will be a paradigm change, a change, many faculty fear, for the worse. Faculty skepticism is of course due in part to resistance to innovation and fear of change, as administrators charge. But they are, after all, the professionals and know something about the difficulties and opportunities of conventional classroom teaching. They have reasons to doubt that an item by item electronic replacement of their classroom is possible.

Faculty consistently anticipate specific losses with respect to face-to-face teaching in an electronic classroom. How, they ask, can one duplicate the learning experience of a highly interactive classroom on an electronic network, and how can one reproduce the wealth of informal human contacts that add so much to education on a campus? How can the intense moments of human

interaction which mark our memories and our lives ever occur in a sterile electronic environment experienced in the isolation of the home? Students confirm what faculty suspect, that they are poor TV performers, that it is boring to watch them on the little screen. And both faculty and students complain that computer programs that are supposed to replace specific teaching tasks, such as guiding students through exercises, are often difficult to use or even incomprehensible.

On the other hand, faculty detect continuity in administration enthusiasm for cost-cutting at the expense of traditional educational roles and values. Between 1970 and 1995, the number of full-time faculty increased by about half, while over the same period part-time faculty grew by two and one half times. If the trend continues, part-timers will overtake full-timers on college campuses in three years. At community colleges, they are already in the majority. This worrying trend parallels the growth of the nontraditional or returning student population, which now constitutes the majority of students in higher education.

These students require different course schedules than the traditional ones to which faculty are attached. Largely because of this, adult education has developed outside the standard academic departments and procedures under direct administrative control. As a result, a vast parallel system of higher education has emerged in which faculty have low status and little power. Since it serves adult learners, precisely the students most likely to be open to distance learning, this parallel system has a free hand to experiment even if traditional universities resist.

These trends set a precedent for adminstration strategies. A straight route down the information superhighway leads from the deprofessionalization to the deskilling of higher education. The replacement of full time by part-time faculty is merely the opening act in the plan to replace the faculty as such by CD ROMs. A new economic model of education is being sold under the guise of a new technological model. This is the route to what David Noble calls "digital diploma mills." Understandably, this is not a route many faculty wish to travel.

The Question of Distance Learning Technology

I believe there are two closely linked problems here. First, the source of innovation has shifted from faculty to administration; and second, the nature of the innovation has shifted as well, from text to video based communication. In what follows I will attempt to explain this linkage between actors and their preferred technological designs.

When faculty were lonely champions of the new distance learning technologies, their primary goal was pedagogical success. They had few resources and relied on inexpensive technologies such as email. They were engaged through their vocation as teachers, their commitment to finding new and exciting ways to transmit knowledge and culture. Their principal allies were students interested in playing with computers, and occasionally companies willing to donate equipment. This was a world of tentative experiments in which the stakes were small and near term expectations low.

The present administration dominated phase of the development of distance learning is very different. Now it's all about efficiency and, ultimately, money. And there is plenty of it for high tech approaches to education, if not to staff the French department. Contrary to the popular impression that the academic world is poor, universities in fact spend about $200 billion a year in the US. That is 34 times the revenue of the movie business according to the calculations of Christopher Oberg from whom I draw these figures. Administrators command these resources and corporations know it.

Huge sums are involved in the purchase of elaborate networks. Corporations are major players and find a ready audience for their most expensive technologies among adminstrators, all too easily dazzled by the sales pitch for video-conferencing, automated learning, and the Internet. Big investments in technology today are supposed to pay off in savings on facilities and salaries tomorrow, although the details remain fuzzy. Pedagogical objectives take the back seat to prestige and budgetary ones. Faculty and students are not allies but obstacles to be swept along by the inevitable momentum of progress.

The shift from faculty to administration centered innovation is more than a shift in actors and their allies. It is also a shift in what might be called spontaneous philosophies of technology. By this I mean that administrators typically have a different vision of technology and what it can accomplish than faculty.

Perhaps this is due to the influence of corporations. Salesmen seem often to have the ear of administrators in a way faculty do not, and they use their access to sell not just devices but also the content/process distinction which gives plausibility to their claim to be able to revolutionize something called educational "delivery" without much attention to faculty needs. The faculty already know how to teach and the technology is there to "deliver" the existing classroom experience online. From the standpoint of this dubious doctrine, it seems natural to suggest that new tools be used simply to reproduce the classroom experience or better still, to automate its elements and deliver it as a package.

The aim of reproducing or automating the classroom feeds directly into a preference for video, which seems to offer the closest equivalent to the classroom experience. If administrators believe that, they may buy these expensive tools in the expectation that faculty will be able simply to pick them up and use them. This is naive, even from a business standpoint. But in fact universities do not seem anxious to make the enormous expenditures on adaptation and training that typically accompany the acquisition of complex new computer systems in the business world. A perverse fascination with capital investment seems to be involved.

Faculty, when they actually engage with the new teaching technology, sense immediately that it is not mature, that electronics is not there yet as a ready tool. In the actual experience of online education, technology is not a predefined thing at all, but an environment, an empty space faculty must inhabit and enliven. They have a craft relation to the technologies rather than a development strategy. They try to get the feel of it and figure out how to animate it.

This difference is reflected in different technological emphases. Live video, with its complicated and intimidating apparatus, holds little attraction for either teachers or students. While it would be nice to be a "star" professor in an automated virtual class, most faculty do not aspire to that exalted status. To the extent that they are interested at all today, most faculty appreciate the graphical capabilities of computers in a different connection, as aids to presenting information and exercises in computer labs. But these applications are better compared to textbooks than to classrooms; they are supplements to, rather than replacements for, classroom teaching.

Although neither video conferencing nor automated learning have caught on with faculty, there is a long history of enthusiasm among at least a small group of them for interactive text based applications such as computer conferencing. These experiences go back to a time when there were no more elaborate alternatives; it is widely assumed that the introduction of image and sound renders earlier approaches obsolete. But perhaps that is a mistake. The latest equipment is not always the best for the task. Could it be that our earliest experiences with computer conferencing were not merely constrained by the primitive equipment then available, but also revealed the essence of electronically mediated education? I believe this to be the case. Even after all these years the exciting online pedagogical experiences still involve human interactions and for the most part these continue to be text based.

But here is the rub: interactive text based applications lack the pizazz of video alternatives and cannot promise automation, nor can they be packaged and sold. On the contrary, they are labor intensive and will probably not cut costs very much. Hence the lack of interest from corporations and administrators, and the gradual eclipse of these technological options by far more expensive ones. But unlike the fancy alternatives, interactive text based systems actually accomplish legitimate pedagogical objectives faculty can recognize and respect. There are good reasons for this.

Considered as an environment, the world of online interaction has properties that determine its appropriate use. Just as a concert hall is a space appropriate for different activities than a living room, so the electronically mediated spaces of computer networks are also suited to specific activities. It would of course be possible to conduct a class in a restaurant, or dine on a basketball court, but the results would likely be disappointing. Similar abuse of the online environment will also yield disappointing outcomes. But this is precisely what happens when we try to reproduce a face-to-face classroom online or on CD ROM.

The basic fact about computer networks is scarcity of bandwidth. Even with all the recent advances, we are far from being able to reproduce the actual experience of human proximity in space. Indeed, it is hard to imagine in what that would consist. What kind of network would make it possible to bump into someone on the way into class and make a new friend, to carry on a heated discussion after the end of the hour, to catch the professor's eye and exchange an instantaneous glance in which boredom or alertness is tacitly expressed?

On the other hand, we have a well established method for communicating in a narrow bandwidth. It's called writing. And we have a rich experience of using writing to overcome the limitations of bandwidth. Writing is thus not a poor substitute for physical presence and speech, but another fundamental medium of expression with its own properties and powers. It is not impersonal, as is sometimes supposed. We know how to present ourselves as persons through writing; this is what correspondence is all about. Nor is it harder to write about ideas than to talk about them; most people can formulate difficult ideas more easily in written form than in speech in front of an audience.

These considerations on writing hold the key to online education. The online environment is essentially a space for written interaction. This is its limitation and also its potential. Electronic networks should be appropriated by educational institutions with this in mind, and not turned into poor copies of the face-to-face classroom which they can never adequately reproduce.

While interactive writing is the basic medium of expression on networks, in recent years we have learned to enhance the network experience with sound and image, and that is a good thing. But writing is the basic medium of online expression, the skeleton around which other technologies and experiences must be organized to build a viable learning environment.

In online education as in the classroom, we must be careful to distinguish the basic medium from the enhancements and not to confuse their roles. Speech is the basic medium in the classroom, and we supplement it with labs, movies, slides, text books, computer demonstrations, and so on. Similar, enhancements to the written medium are possible on networks. But confusing the medium with the supplementary enhancements leads to the pedagogical absurdity of teacherless education.

To replace online written interaction with the enhancements makes no more sense than to replace the teacher in the face-to-face classroom with labs, movies, slides, text books, and computer demonstrations. That was tried with educational television and computer-aided instruction long ago with no success.

What does this say about the ambition to replace campuses with virtual universities? Large markets for distance learning will undoubtedly emerge, and this will be a blessing for many students who cannot attend college classes. But if we cut higher education loose from the the traditional university and its values, the blessing will turn into a disaster. The best way to maintain the connection is through insuring that distance learning is "delivered" not just by CD ROMs, but by living teachers, fully qualified to teach and interested in doing so online.

Then prepackaged materials will be seen to replace not the teacher as a mentor and guide but the lecture and the textbook. Interaction with the professor will continue to be the centerpiece of education, no matter what the medium. And of course for most people that interaction will continue to take place on campus if they have the means and the mobility to attend a college.

There is some evidence that students share this view despite the marketing hype for distance learning. In its first weeks, after $9.5 million in expenditures, the Western Governors University had only 10 enrollments. This disappointing start for a major initiative in online education may have been due in part to

embarrassing technical difficulties, but it also signals that, whatever its usefulness, distance learning is unlikely to be the panacea claimed by its commercial promoters.

Conclusions

Let me summarize now the conclusions I draw from these reflections.

First, administrators and businessmen should forget the idea that distance learning systems based on videoconferencing or CD ROMs and star professors will replace face-to-face classroom education. The dream of automating the educational process has failed so often in the past that there is little reason to take it seriously on this, the nth round.

Second, politicians need to be realistic about the future costs of higher education. Distance learning is not going to be a cheap replacement for campuses. Some other solution to the parking problem will have to be found. The campus experience will remain in demand for the foreseeable future.

Third, the overselling of foolish ideas about technology should not be allowed to discredit the whole field of online education. We as faculty need to get beyond defensive contempt for this significant educational innovation and look at specific designs with legitimate pedagogical objectives in mind.

Fourth, the educational technologists themselves need to continue to work creatively with faculty and students to devise truly viable applications that fulfill real needs. There are good reasons for sticking with interactive text based systems systems and supplementing them with visual and other online resources, rather than attempting to duplicate face-to-face education online. The design challenge of improving the original text based systems is well worth pursuing.

Fifth, we must give serious thought to the implications of student diversity. The influx of returning students over the past 15 years has had major benefits for many people who missed the opportunity to finish their schooling in adolescence. New educational formats have been developed that work better for them than the traditional residential college teaching schedule. But these innovations have gone along with a devastating deprofessionalization that has gutted the occupation of university professor of security and respect for approximately half of all current faculty. The idea that distance learning can now deskill the already half deprofessionalized profession is so obnoxious that I can see why many faculty believe its advocates should be run off the campuses.

However, negativism is not enough. The failure of the faculties to demand the right and privilege of teaching returning students, to innovate new formats appropriate to their needs, and to exercise control of their education has led to the current situation. The systematic rejection of online education will not stop further deprofessionalization. The dream of automation under cover of which this process will go forward deserves criticism, of course, but that should not become an alibi for ignoring real dangers and opportunities. The faculty must accept the responsibility now for shaping distance learning, and in the process, it should also attempt to reclaim ground lost in the development of programs for returning students.

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