The New "Space" of the University in the Digital Age

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HOW IS DIGITAL TECHNOLOGY REALLY RESHAPING THE CULTURE OF HIGHER EDUCATION?

While critics of the new computer-mediated learning styles utter jeremiads about the impending apocalypse of higher education in general, technophiles argue that the changes are all salutary. In fact, some see no difference between faculty cultures and online and traditional schools (Johnstone, 2001). In the same vein, the proliferation of digital classrooms across the instructional spectrum and online learning have touched off a firestorm of controversy concerning the "effectiveness" of new computer-mediated pedagogies versus traditional face-to-face, or "presential," instruction. Various studies have been conducted and the findings circulated (Smith, Smith, & Boone, 2000).

Each research project purports to demonstrate the degree to which educational outcomes are enhanced or diminished by distance learning formats, such as the replacement of lectures by interactive Web chats or discussion forums, the use of e-mail for office hours, and so forth. As with performance assessment models in general, so many of these research initiatives cancel each other out. At the same time, they conceal the investigator's own biases or wishes without examining assumptions. They also betray notoriously imprecise general concepts of what the studies themselves are actually measuring.

One of the basic problems in comparing computer-centered courses with conventional ones is that the common definition of outcomes varies from field to field and subject matter to subject matter. Such definitions themselves have to be revised in a distributed learning ambience. Just as theoretical physics in the 20th century made the epochal discovery that all experimental results are observer-dependent, instructional theorists in the current era A.D. ("after digitization") must recognize that the character and quality of educational experience is contingent on the larger context of both interpersonal and electronic transactions that take place between the learner and the accessible learning universe.

Since at least the turn of the millennium, the debate over electronic course delivery has shifted to discussion concerning what kinds of computer-prosthetized learning strategies meet the goals, including financial targets, of higher education. In many important respects, the very notion of what used to be termed "distance education" has become irrelevant in the digital age. Increasingly, such expressions as "online education," or "e-learning," are replacing the idea of education at a distance (Weigel, 2000). As Carr-Chellman and Duchastel (2000) have noted:

the new online paradigm calls not so much for providing instruction at a distance, as for making available learning resources and instructional activities to students. This holds true wherever the students are (just down the street or on another continent) and whenever the students need the resources and activities. This is not dissimilar to the move toward just-in-time learning in training environments within corporate America. (p. 242)

Once a highly specialized and marginalized learning culture within the standard American university, online education is becoming the norm rather than the exception. Estimates indicate that, within the coming years, more than three-quarters of mainstream institutions of higher learning in the United States will have availed themselves of online educational methodologies as integral components of traditional programs (Schrum, 2000).

The concept of "learning at a distance" emerged decades before the Internet under the guise of old-fashioned correspondence courses, designed to bring

learning to remote and rural areas. Later, these programs were enhanced with new technologies, such as closed-circuit television and videoconferencing. Distance education began to grow rapidly in the 1980s, especially among business and engineering programs, as well as for-profit schools that sought to reach active professionals in the field. These programs relied on proprietary, and sometimes expensive, delivery systems that offered competitive advantage to new institutions, or "continuing education" divisions of existing institutions, that were not regarded as mainstream at the time in higher education. Through these early distance education ventures, entrepreneurial schools were able to carve out markets that were unprecedented in the academic world. But, in many respects, they did not change the structure, or paradigm, of learning itself. By and large, they simply ported the traditional classroom from one locale to another. Television and compressed video equipment, for example, enabled a professor to give lectures in more than one place simultaneously, but the age-old and familiar presential style of instruction remained.

The coming of the Internet, on the other hand, has forced, and will continue to force, a significant change in the way learning is conceived and experienced by the student. It will also result in a thorough metamorphosis of how we imagine the nature of colleges and universities themselves, as well as their very knowledge products. Higher education is now on the leading edge of a climate shift" that is resulting more from the cognitive habits and expectations of the learner as from any strategic calculations on the part of educational providers themselves. The Internet has given a broad, technological imprimatur to the notion of learning "at a distance." But the constriction of physical space with the revolution in digital communications is far less significant than the transformation of what we call the "knowledge space," which the new learning itself occupies. What do we mean by "knowledge space"? And how is this transformation of the knowledge space having a major impact on our ideas about the space which the university itself occupies?

First, we need to understand how our sense of space itself has been redeployed in the present era. Up until the turn of the 20th century, the idea of space connoted what Sir Isaac Newton had laid down in the 1600s. Space was a kind of material substrate, an all-pervasive "substance" that undergirds physical phenomena. But by the late 1900s, this basic metaphor for spatiality began to come under intense criticism. The Newtonian worldview itself began to come unglued, and the end result was Einstein's principles of relativity and the scientific paradigm shift that came to be known as quantum theory, or "the new physics." associated with such figures as Werner Heisenberg and Niels Bohr. Quantum theory recast the concept of space that was common in philosophy as well as science. Space was no longer the extent of all mathematical dimensions, but simply part of the uniform "geometry" of space-time.

The notion of "non-locality" looms large in contemporary physics as well. In the Newtonian worldview, events in space and time were discrete and discontinuous. They could be plotted as points on a geometric grid. But in the "new physics, the different regions of space-time are linked and continuous with each other. Particles in the subatomic domain are, in fact, materializations within specific "neighborhoods" of space-time of waveforms that are "non-local." These waveforms can manifest themselves at any moment or in any place. We are justified in claiming that a particular particle "exists" at any particular moment or at any particular point, because our observation of it has brought about a "collapse" of the waveform. Observation is the key to localization, although what remains as yet unobserved comprises the underlying reality of the entity, or particle. Just as the preponderance of an iceberg is hidden beneath the sea, so the extent of a "thing" is concealed within the expanse of its wavelike potentialities. Any object is as much virtual as it is actual. Space is not constituted by the visible, but by a vast, invisible "continent" of virtual states.

In the 20th century, "space" has undergone numerous semantic metamorphoses. It has been broadened from a physical construct to a term that denotes the complex relationship between forces, functions, or factors. From Einstein onwards theoretical physicists have radically redefined material space, stretching our imagination regarding the universe with hypotheses about "black holes" and "light cones" and tunnels between dimensions. The evolution of the notion of "cyberspace" as a set of ethereal interlinkages between data processing operations has followed this pattern. As PBS science journalist Margaret Wertheim (1999) argues: