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Carry on learning: Learning Cyberspace

Review of: *Essays on the Evolution of Media and the New Education.* Paul Levinson. Amamnesis Press.

By **Dr. Ray Scott Percival**

THE AZTECS knew about wheels but used them only in toys. The invention that made the mass use of the Internet possible, the personal computer, was also simply a vehicle for games and novelties to many people in the 1970s and early 1980s. The telephone, too, was initially seen as a mere toy, with no commercial possibilities. This is typical, says Paul Levinson in Learning Cyberspace of reactions to new communications media. His book is delightfully optimistic about the potential of technology, subtly squashing cynical views of technology's baleful influence.

For technologies that come to be exploited fully, this is part of a three-stage evolution: from toy to mirror or manipulator of reality; then as midwife of art – each stage including its predecessor. The PC is remarkable in that it has gone through all three stages in roughly 15 years, a rapidity of development that has made it appear inevitable.

However, the example of the Aztecs and the wheel, Levinson points out, refutes any historicist ideas about the "inevitable" evolution of computers. Instead, it should remind us that we are responsible for directing and shaping its development. I agree, but only so far: we may end up willingly sacrificing some control to the self-evolving computers and programs developed by Danny Hillis, Gerald Edelman and others.

So what have we been doing to exploit our new toy? Well, in May 1988 Gail Thomas, a businesswoman from Long Beach, California, made the journey to New York to receive her MA diploma and march in the New School for Social Research graduation procession. The trip and the procession were purely symbolic, for Thomas had completed the work for her MA entirely online. She is the first to have done so.

You'll find her story in Learning Cyberspace. Books on the Internet crowd the bookshop shelves, but Levinson's is a rare find. He not only explores the potential and the reality of online education, but also places it in a philosophical and historical context. To this task, he brings the experience of 10 years in online education plus 15 years as a philosopher and historian of technology.

Levinson is president of Connected Education, a company based in White Plains, New York, that offers academic courses entirely via online computer conferencing in cooperation with the New School for Social Research, the Polytechnic University of New York and other institutions. Since 1985, more than 1500 people from a list of 18 countries that includes Singapore, the Netherlands and Colombia, have taken Connected Education courses. None of the courses requires any physical meetings.

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An online doctorate is under development by Connected Education with Bath College of Higher Education and several British universities. The potential market for online PhDs is likely to be staggering, because there are hundreds of thousands of people whose lives do not fit in with a university schedule, and yet who yearn for a doctorate.

Levinson harks back to the invention of writing. Taking a bird's eye view of history, he sees the underlying motive force of the extraordinary rapidity of media development and its culmination in the Internet is the emergence of abstract written language and its greater copyability. The alphabet with its 26 letters is far easier to copy than earlier pictographic systems and their idiographic and hieroglyphic offspring. The Chinese invented printing during the Sung Dynasty, but this could not lead to the mass production, transmission and manipulation of text because every idea had to have its own distinct iconic symbol. Some ideas, such as "idea", could not be encoded. But the alphabet allowed moveable type and the construction of abstract messages, including messages about how to construct and transmit messages.

Writing was a liberating force, although even the ancient Greeks expressed contempt for its limitations. In The Phaedrus, Socrates complains: "I cannot help feeling, Phaedrus, that writing is unfortunately like painting: for the creations of the painter have the attitude of life, and yet if you ask them a question they preserve a solemn silence ... But may we not imagine another kind of writing or speaking far better than this is, and having far greater power? ... I am speaking of an intelligent writing which ... can defend itself, and knows when to speak and when to answer and when to be silent."

In the development of hypertext and hypermedia, Levinson feels that we have found a partial answer to Socrates's dream. In hypertext, the reader can click on a word in the text and have instant reference to other occurrences of the word, click again and be shown every place where the concept is explained. More sophisticated hypertext allows connections to other relevant ideas in other articles. Readers are free to establish their own connections between a word in a document and other data. Text is transformed from a simple linear fixed arrangement to a multifaceted entity that the reader can sculpt to his or her own interest.

But the closest approximation to the Socratic dream, Levinson says, is computer conferencing. Hypertext and hypermedia are preprogrammed and so necessarily lack "the attitude of life". But the key to any computer conferencing network is that authors remain in contact with their words, making them responsive to questions in a way only a human mind can make possible. So online education through computer conferencing means that the student is no longer a mute recipient of printed text but an active consumer of text that has been shaped in response to questions and criticism.

These developments undermine old criticisms of literature such as Jacques Ellul's classic denunciation of literature in Technological Society that it makes people more manipulatable by elites. The more recent view of Marxist philosopher Richard Ohman that literature is merely the unalterable propagandistic voice of an elite is oblivious to the open society of electronic publication on the Internet, where publication is inexpensive and the recipient of the literature can mould and publicly criticise its content.

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An interesting philosophical problem that computer conferencing raises, but is only touched on by Levinson, is the possibility of having a computerised moderator. Could a computer be programmed not only to eliminate inapt expression but also inapt content? I think not, for theories, their problems and debate are not computable. Which human, let alone computer, would have thought that Axelrod's work on the prisoner's dilemma would have been relevant to Hamilton's work on bacterial behaviour?

Roger Penrose, the Cambridge mathematician, points out that an understanding of even the natural numbers cannot be characterised computationally. This suggests that whether something is relevant to a problem is even less amenable to a definition in algorithms. Moreover, the logician Alonzo Church showed that the identification of counter-examples to a theory cannot be reduced to a computer routine.

But what we have is a rich resource: universal copyability will eventually enable anyone anywhere at any time to access any portion of the sum total of objective human knowledge. Enhanced copyability, of course, brings with it the danger of the enhanced copyability of error. But this is more than offset by benefits, such as greater safeguards to liberty: enhanced copyability makes a 1984-type Big Brother organisation almost impossible because a dissident document on a single PC can be transmitted to tens of millions of PCs throughout the world.

Levinson places these issues within the context of subjects, such as the mind-body problem and the metaphysics of space travel, that demonstrate how the electronic media are phenomena that have transcended earlier types of existence and, through their prodigious replicatory power, they are set to have a significant effect on the evolution of the world.