Kim H. Veltman

Special Seminar:

Computers and the Transformation of Knowledge

The Challenge of Lifelong Learning in an Era of Global Change, Couchiching Institute on Public Affairs, 1993 Conference Proceedings, Toronto, pp. 23-25.

(Note: Professor Veltman's presentation was mainly visual; an on-screen, computer demonstration of his System for Universal Media Searching. For the benefit of those who did not see it, his remarks have been supplemented, with his consent, incorporating material from a more recent speech.)

I started writing about this in 1979 and people said it was impossible. Then, in 1986, I started putting some of this into the computer while I was Canada's first Getty Scholar, but it's really young computer programmers like Jonathon Shekter and another half dozen student volunteers who are making this vision possible.

When I was in school we were told that there was a revolution that took place around 1454. lt's the revolution McLuhan talked about in the Gutenberg Galaxy: that a man named Johannes Gutenberg published the first book, a Bible. What they didn't tell us was that it happened 746 years after the beginning of printing; that printing had begun in Korea and went on to be developed in the 12th century by the Chinese, who used it mainly to control and limit access to information. What 1454 was about, then, was not the invention of printing but the idea that you could use this technique for giving access to knowledge to the people and not just to the civil servants to control the provinces.

Today, another revolution is taking place, one which I think is greater in its import and its implications than that of printing. This revolution is linked with words like the electronic highway; that we use fibre optics. And it's already underway.

We have a link now between the Rogers Communications Centre at Ryerson University and IBM on Steeles Avenue that is pumping a gigabyte per second. The people at IMAX are talking about using 80 gigabytes per second, so that we couId have IMAX pumped into the schools. One of my teachers, a Canadian who is now head of the Vatican Library, Leonard Boyle, last year helped produce three video discs containing 162,000 pages of manuscripts. He's in discussion with the leading people at IBM to actually scan in 150,000 manuscripts of the Vatican Library. There's a project in Washington that is proposing to scan in 10 million books. And there's a survey that's just been done in Europe of the 75,000 leading libraries of Europe that has come up with a figure of 2.2 billion (that's European billion: a million million) books and a plan to sean those in systematically. The Canadian Heritage Information Network in Ottawa, with whom we're working, has a data base of 26 million museum pieces. And they're talking about getting images of all of those available.

But the revolution isn't only about pipelining, it's about getting access to the information. And that's why I'm doing this. I've become aware that most of our knowledge is actually not visible, or accessible, to us. Ninety six per cent of the holdings of the Royal Ontario Museum are in the basement. The Museum of Civilization in Ottawa also has 99 per cent of its holdings in the basement. If you go to the basements of the British Library or the British Museum you will find large crates, four meters high, with little tabs on them saying, Zambezi, 1888, unopened. You'll find hundreds of the crates, all kinds of cultural heritage which for the last century hasn't even been looked at still in crates. The new electronic media have the enormous advantage that could bring these all together for educational purposes.

How can we make all of this accessible and how can we get it out into the classrooms? The problem is one of access.

Right now there's a war going on: we have businessmen who believe that this is a new way to make a buck, who are trying to buy up the images, both of paintings and of books, on the assumption that they can make this a pay as you go thing, so that the person who can pay the most gets to see the most pictures. Then, there is another school that says this is part of our national heritage and we have to make it accessible to everyone.

I got involved in this because 1 was interested in perspective. I ended up making a standard list, which amounted to 8,000 titles of text and 7,000 secondary literature, all on file cards. I started writing about it and it got put onto the computer at the Getty in 1986. I've been working on it ever since then. The model I'm working on is a system for universal media searching, or SUMS. We're suggesting this might be a model for what we would do if we had this great electronic highway in place. How would we enter a data base with millions of books and images? Quite simply, SUMS would allow a person to access information by computer using a variety of different menu options at a series of levels of knowledge depending on what they wished to know. The basic system involves a series of concepts: questions, domains and levels of knowledge; levels of access, media, space, time, goals, tools and meters.