

# **Networks of Knowledge/Networks of Learning**

by

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In a variety of ways, some predictable and some not, education, media and networked technologies have converged in the late twentieth century. Let me begin by discussing the process of convergence, how education has changed as a result, and talk about the significant role which the media have played in the shifting perceptions which we have of learning and teaching.

These are difficult days for education. We are in the midst of a sea change which will affect many of the assumptions which we have about how students learn and how teachers teach. Educators, administrators and students now find themselves in a new environment governed by very different pedagogical expectations and radically altered assumptions about what works and what doesn't work as communication and learning. This is not entirely driven by technological change. In fact, great care must be taken in how we define change in the late nineties. I am fond of describing the era we are in as a "living archeology" and by this I mean that we are building layer upon layer of change into every activity which we pursue. For example, our schools mix old styles of classroom teaching with new internet based access models which in some cases challenge the conventional wisdom that the "teacher knows all." The mix of pedagogical strategies is a good thing because schools are notoriously hard to change. But the mix also challenges everyday assumptions about educational achievement and the community context of schooling. Libraries are being transformed into digital databases, but thankfully books aren't disappearing. We have not ceased to write letters to each other because of e-mail, but most certainly the form, content and shape of interpersonal communications has been changed by the interaction of technologies like the pen, the computer and the internet. These are but one of many

examples of the layered world we live in. Unlike previous historical periods we are being given the chance to “see” the layers and to experience the construction of the archeological evidence. The changes which we are seeing need to be framed by an intimate knowledge of institutional cultures and the structures which we put in place to facilitate debate, discussion and exchange need to be sensitively aware of all of these dimensions at work. This is the living part of the archeology. In fact, the challenge in the next few years will be to keep all of these parts connected, to have an overview of the whole and to connect technology and process so that the changes do not overwhelm us.

One of the key concepts motivating this presentation is that we need to explore the transformative effects of new technologies by examining what people do with them. This is crucial because networked technologies are defined by distance, by the movement of information and images from one location to another. There is a tendency to talk about networks as if the flow of information across and through them naturally leads to increases in productivity, learning and communication. The problems of distance are seen as a nuisance in part because earlier technologies like television, telephony and electricity legitimized the idea of wired worlds which connect people and societies to each other quickly and with great speed. But, in much the same way as we now talk about mediatized environments defined in large measure by instruments of communication, the geography and architecture of networked environments are in need of new metaphors, if not a new language and discourse of analysis and description.

For the most part, we tend to talk about the information or the technology, but we have barely begun to understand the context of use, the ways in which we learn or whether we learn at all. What do we mean by “network” and are networks innovative constructs which enhance and enrich human relations? What happens to the learning process when so much information is moved along telephone lines, layer upon layer, location upon location? What is the relationship between learning and information? In fact, given the dramatic shifts which we are now experiencing, do we have to change our customary definitions of information and communication?

In highly “mediated” environments, it is no longer possible to talk about information, meaning, messages and comprehension in the same way as we have in the past. This I would suggest, has profound implications for policy-makers in education, communications and government. It will affect the entertainment and marketing industries, the manner in which we communicate, the fundamentals of teaching and learning, the ways in which we govern our institutions and crucially, the manner in which we communicate with each other.

I would like to step back and begin by asking what we actually expect from students, parents and ourselves when we make the suggestion that education is a necessity within mediated and networked environments. I raise this not to be capricious, but to encourage the development of a new set of definitions which can account for the dynamic transformations which we have been experiencing and which can locate and then specify the role which people play in the transformation. “By redistributing information and knowledge, these technologies will change structures of power and authority within organisations (including educational institutions) and the way they work. They also force us to rethink our education systems, giving more attention to adult learning, reshaping how we prepare young people for adult life, stressing the autonomy of the learner, shifting the focus of systems and processes from teaching to learning, and the balance between public and private sector provision. More fundamentally, by redefining the ways in which people get access to information and knowledge, they raise quite new questions about how knowledge is created and who owns it.” (Stephen McNair, “Adult Learning and Technology in OECD countries” Draft report of the Philadelphia Roundtable, 14-16 February, 1996, page 2.)

One of the central concerns of modern societies is education. However, since the 1960’s education has become a focal point of discussion in relation to culture as a whole. It is no longer the case that education simply communicates the collective stories, histories, skills and knowledge of a given society. Education is as much a site of contestation as it is a place for interaction and learning. This is, of course, a very positive development because it has moved education from the privileged

to the many. At the same time, our definitions of education, of learning and of teaching have not changed that much. There is still a tendency to see learning in a narrow way, circumscribed by the institutional politics of schools, the vested interests of teachers and administrators and the presumed effects of communicative practices which focus on the student as the effective result of the entire process. This has been a recipe for stasis even during that most innovative period of educational reform, the 1970's.

There is a very concrete example of this stasis at work in the educational system in Canada. As a result of a generally weak analysis of popular culture, schools in Canada rarely teach about television or even the cinema. Courses in media tend to be found in English Departments and there are very few examples of courses in popular music, videoclips or electronic forms of communication. The core of what we teach and what students presumably learn, leaves out the vast majority of cultural influences which are at the heart of their experience. If schools had reacted to major cultural shifts in this manner in the 19th century, and this is particularly the case with the post-secondary system, then it is unlikely we would have courses or have developed disciplines in some of the most innovative areas of the sciences, social sciences and humanities.

I bring this up and my examples have been carefully chosen, because so much of what we define as networked, so much of the material which we communicate across our networks is based upon the combination of media which I have just mentioned. The convergence of which I am speaking then goes further and is more profound than anything which computers themselves have provoked. And the results have been barely factored into what we actually do in our schools. The absence of popular culture in our schools, the disdain which educators have for popular culture has prevented them from seeing the convergences at work — the wonderful link for example between reading books and going to the cinema. The result has been a focus on the World Wide Web for example, which sees it as a provider of information, another database, when the WWW is really about an historical realignment and redefinition of access, communication and crucially, learning. Popular culture is one of the sites of a lifelong

learning process which both conflicts with formal education and compliments it. In this respect, educational institutions will have to adjust to more than a new set of technologies. They will have understand that learning is both formal and informal, practical and theoretical, vocational and academic. The lines of demarcation will have to be redrawn so that the acquisition of a skill is not seen in opposition to more traditional forms of academic exploration. I see this challenge as fundamental. Schools will have to become supple, able to adapt and as institutions, learn that a student may arrive with more skills and knowledge than they expect. This knowledge may have a mixture of characteristics and origins to it, but it will have to be acknowledged if not incorporated into curriculum development.

In reaction to these changes, many government policy-makers have shifted the educational terrain to one of training and literacy, supposedly quick solutions to problems of employment and economic productivity, cultural and technological change and knowledge. These shifts have a certain logic to them. They locate the need for an education in the contemporary concerns and needs of particular social formations. They link the economy, work and knowledge with outcomes and with results. A crucial feature of this process is a desire to measure the relationship between learning and employment. The premise is that knowledge must be concrete and what students learn prepares them for the workplace. To some degree, this is understandable. Learning has always been about accreditation. Whatever we may say about a Bachelor of Arts degree, however we measure its effect on the students who qualify for it, there is little doubt that the degree has always been seen through the lens of future employment.

Inevitably, a certain kind of linearity is inherent in our thinking about education and learning. This linearity doesn't necessarily lead to the results which policymakers anticipate, but the links make it seem as if we can produce students who will be able to find jobs and lead productive lives. Anyone who has been involved in education knows that there are significant variations in this process, that in the great majority of cases learning and employment are not natural partners and that innovation would not be possible if they were. Most of us were not specifically

trained for what we presently do. And for the most part, we become competent over time, through experiences which few schools could or should duplicate.

Why then is education a necessity? "When people look too hard at degrees, we suspect they see a sort of intellectual bill of lading, a receipt for knowledge-on-board. Teaching, in this view, is a delivery service and school a loading site. No one actually says this, but a delivery view nonetheless underlies much of what people perceive about schools. An implicit delivery view also leads some to think of educational technology as a sort of intellectual fork-lift truck. If it's true that the most effective technology in the classroom is still the overhead projector, this may well be because it and many of the alternatives have been designed with delivery in mind." (John Seely Brown and Paul Duguid, "Universities in the Digital Age," Change: The Magazine of Higher Learning, July/August 1996, Volume 28, No. 4, p 13)

It is ironic that delivery as a concept and as a practice is the foundation for networked education. In the context of the Internet and the World Wide Web, education develops into a mechanism for information delivery. The delivery model supports the perception that information and learning go together and makes the need for a particular kind of education seem even more central than it ever has been. That is why education has developed into the fourth largest industry in Canada and the sixth largest in the United States.

But in mediatized environments, even at the earliest stages of development and growth, information is no longer found in just one location, is not just the product of one process. Educational institutions which used to have control over knowledge and over its dissemination now find themselves in environments where education is simply one of many different cultural experiences. This may then provide us with a preliminary definition of networks in the context of the late twentieth century. Networks are driven by notions of connectivity which are in large part derived from delivery models. They are minimally interactive even in situations of tremendous bandwidth. They allow anyone to make the claim

that knowledge can be derived from information and they enlarge the boundaries within which ideas circulate. Networks also increase the speed of delivery and in so doing place even more pressure upon the people who make use of them. Paradoxically, even as this process reveals its contradictions, the pressure to learn, to be retrained, to be educated increases.

These increases are explained as products of globalisation and economic growth, as examples of new ways of distributing wealth and dramatic shifts in conventional definitions of productivity, work and leisure. The very idea of a network naturalizes assumptions about communication to the point that successive meetings of the MacBride Commission since 1981 have asserted that communication is a right in the same vein as democracy and representative forms of government. I don't disagree with this in principle. I have just seen very little which explains what we mean when we say that communication is a right and I have seen very few policy documents which explore the implications of the linkage between information, networks, democracy and education. What does "to know" mean in the context of a communications network? Does it mean knowledge which I have developed on my own? Does it mean fragments of knowledge which I put together and return to the network in a different form? Aren't information networks just advanced forms of broadcast media? If so, what kind of pedagogies work best in contexts which are often solitary and devoid of human contact?

Is the presumption correct that the more informed we are, the more likely we will make decisions which reflect depth, rigour and an overview of priorities which are not solely or simply based on immediate need or vested interest? Is access to information the foundation for concerned and committed citizenship? Which kinds of information educate and which kinds do not? Are databases of varying sizes repositories of knowledge and will access once again be a determining factor in their use? Does the structuring of information sources into vertical monopolies threaten the way in which information is communicated, the development of network architectures and the priorities of public policy? What does the term content mean in this environment?

These questions needed to be posed but there are no simple answers and this is in part because the “practices” associated with learning, with networking and with communications are not as concrete as the technologies would suggest. The existence of a database like the existence of a library is only as concrete as the human beings who make use of the information which is available. Patterns of use, information extracted, books taken out, are convenient details of an empirical nature, but what do they say about the activity of reading, and all of the activities of fantasy and the imagination associated with reading? Clearly the presence of the technology is only a small part of what we do with it, but in a metaphoric sense, the technology seems to stand in for subjectivity. We are then in the paradoxical situation of collapsing technology and human subjectivity because we do not have the ethnographic tools to examine our experience nor do we have the interpretive tools to critically explore what we are doing. The lack of self-reflection is at the heart of what propels us forward which is why so many of the other metaphors presently in circulation suggest that networked technologies are out of control and wrecking havoc on conventional living habits and social formations.

Let me go even further. We have so few methods available for analysing networks and the information they carry that we are forcing the issues in a premature fashion. This is where arguments about education become so crucial. Networks describe vast agglomerations but how does one come to grips with size? How do we distinguish the parts when the whole itself seems to be ungraspable? Or is the very idea of the “whole” meaningless in this context? Remember, schools have always been examined and evaluated through quite narrow conceptions of the local, but what happens when local as a concept means something quite different from what it meant in the past?

In this context we are going to need radically different ways of entering the databases which we are creating and distinctive tools of evaluation and discussion. But even more so, we are going to need different ways of archiving the information we collect. At the same time we will have to reconceptualize the activity of learning how to use the archive and how



we translate its systems of classification into creative pedagogical practices.

Am I overstating the matter here? When McNair says that “Lifelong learning calls for a shift of educational attention from teaching to learning: from what teachers think should be taught to the problems which learners need to solve” (page 5) he is suggesting more than a shift in method. He is recognizing that the terrain of educational reform will in large measure be defined by how well we anticipate and prepare for new strategies of teaching and learning and for a different if not unrecognizable community of students.

How then can what I have been talking to you about be translated into action? Let me suggest the following:

- As Bruno Latour has so astutely pointed out, technology is a way of life, not just a tool to be used in certain circumstances and under certain conditions. By this he means that we live within a world that is technological by definition. Consequently, we must rethink our organisational cultures so that technologies of communication are not perceived as a threat. This means using public and private resources, however limited, to enhance and develop the role of interconnected networks as teaching and learning tools. But, implementation is not enough. Wiring a school means very little if we do not develop the language, both critical and evaluative to examine the impact and use of the technology. This means going beyond the conventional parameters of curriculum development and pedagogy. It means increasing the awareness of teachers and students so that quality and content become as important as using the network to enrich the available flow of information.

- The strategies here must be long term and must take into account cultural difference and cultural diversity. Recent efforts to introduce electronic communications to Ghana have focused on using readily available materials from the United States. This is a world-wide trend. Policies have to be in place to protect local concerns, but as I

mentioned earlier, definitions of local have themselves changed. I am convinced that local cultures are strong enough to sustain their interests while also pursuing others. This resilience is not usually the focus of policymakers in the fields of international education and communications. But, it is my own feeling that local cultures incorporated and always have incorporated those elements of other cultures which they find useful and related to their own needs. I would suggest therefore that we need hybrid models to explain information flows.

- Schooling now takes place in so many different geographical sites and in so many different ways that we will have to broaden our conception of educational institutions. This broadening of definitions means that in education we are effectively creating cultural contexts for learning and teaching. We must retain the mix between the social context of the classroom and the individual pursuit of knowledge and accreditation.

- We are entering an era of partnerships and collaboration. Distinctions between the academic and the vocational must be broken down. I would stress however, that the liberal arts, the creative arts and the social sciences must continue to develop agendas and pedagogical strategies which are driven by goals that are not necessarily dependent upon immediate social, economic or cultural gain. I am arguing here for policies which recognize the importance, the centrality, of learning for its own sake. The greatest danger to our intellectual heritage and I would suggest to our democratic institutions lies in recent efforts to instrumentalize all forms of education. This misguided effort to transform learning into delivery and to judge the impact of educational experiences through a limited definition of their result, (usually employment) risks disempowering both students and teachers.

- Virtual schools and universities will certainly help enhance education as a life-long experience and this is one of the most positive aspects of networks. But, as Brown and Duguid suggest we will still need “authentic communities of learning, exploration and knowledge creation.” (18) Education will never just be a “distant” experience. Local institutions must be a functioning part of all networked experiences. That is only way to keep the checks and balances in place, and is the only way of ensuring that students learn through the social and cultural experiences of human contact and interaction.

- Finally, a recent policy paper by the Benton Foundation states the following:

“The advanced telecommunications networks being built today could support increased civic participation--or they could encourage sound bites and demagoguery. They could support the electronic equivalent of public spaces, where people come together as informed citizens--or they could provide only electronic malls, where people are targeted as spectators and consumers. At stake here are the workings of democracy.

Traditionally, citizens gleaned political information from a variety of sources--newspapers, television, radio, neighbors--deliberated about issues and candidates with friends and family, and finally voted at the neighborhood polling station. Today, all this can be accomplished from one's home at a single sitting, providing enormous opportunities for the fulfillment or negation of democracy's promise.”

The same could be said about networked forms of education. If care is taken, we can combine the best aspects of traditional education with dramatic increases in accessibility. If care is taken, the virtual will not be trumpeted as a replacement for the real, but as one more representational system which we use to explain the world to ourselves and to each other. If care is taken, networks of information will not be confused with environments for learning and

empowerment will come through knowledge in the broadest sense. If care is taken, we will not confuse skills with craft, or try and set up a conflict between practical and academic experiences. Instead, we will recognize that what the Internet provides us with is the chance to critically examine both the ideas we research and the knowledge we use. And like archeologists we will make use of all of the characteristics, evidence, theory and history to ensure that we retain as complete a picture as possible of the cultures which we are creating and the students whom we are teaching.