Abstract

The opening article in the special issue, Interactivity, Interconnectivity, and Media, takes the high ground in examining the largest and most far-reaching cultural issues associated with the building and maintenance of knowledge.

Much is at stake, as the cultural transition from paper to screen will involve all disciplines in developing new rhetorical rules, behavioral conventions and evaluation modes.

All institutions will need to prepare their constituents for a hyperactive data world.

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The book with its long development and well understood conventions is being challenged by hypermedia with its as yet unformed conventions for use, while vested interests vie for power and control of information dissemination and storage. Traditional issues of standardization, verification and authenticity solved by the institutions of the book are reopened as issues by hypermedia. Language itself is being reexamined.

Loss of an Empire/Gaining Another?
Dietmar Winkler

A new technology sometimes creates more than it destroys. Sometimes, it destroys more than it creates. But it is never one-sided.[1]

Umberto Eco, with great humor and charm, points to the fact that people who read their powerbooks in bathtubs are at risk of electric shock.

At the same time, in 1996, championing the traditional book and enlisting Aristotle and Kant to confront its electronic future, he piped his lecture through electronic means from Bologna, in Italy, to Bergen, Norway and from there, via satellite, to places such as Louvain, Pavia and Oxford. Slyly, he takes advantage of the modes of information transfer to reach a greater, more diverse audience with one lecture than if he had been denied this electronic advantage.

In San Francisco, Edward Tufte makes a statement on the book as the best form by which to transmit statistical information. However any electronic mapping program will locate, with pinpoint accuracy, the address of a citizen living on a dirt road in the smallest of towns anywhere in the United States — and will do so within seconds.

Who is right, who is wrong?

In the last analysis, the debate over hypermedia and the traditional book boils down to the shifting power paradigm, with lively debate over the tradition for accruing and storing knowledge. The manuscript tradition has not been challenged throughout the millenia of its existence; neither have the language conventions embedded in it,

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and the complementary processes through which knowledge is stored and transferred.

There is a good chance that, as power shifts, the baton will pass back and forth until a social contract is massaged from the deliberations — through trial and error — a contract that will bind members to protocols, provide expectations for conduct and invent processes for verification or self-responsibility or trust, and the intellectual skills for synthesis, sense-making, outcome-foreshadowing and valuation.

The debate is a welcome investigation into aspects of language and knowledge that would have stayed dormant, or been overlooked, or even been taken for granted. These views can surface only because of the power confrontation between the singular history of the manuscript and tradition of the book, which got us where we are now, and the chancy impermanence of hypermedia, which might get us somewhere in the future — but then again might not.

There are two worthy groups of opponents: those who rally around the cultural tradition because their lives are profoundly bound to its values, and who fear the destruction and loss of a culture built over many epochs; and those who are deeply committed to new horizons, and do not look back at human evolution but forward to new human futures. In the middle is a very large group identifiable by shrill doomsday rhetoric or intensified techno-babble.

There is of course power in each of the extreme positions. To reject technology on the grounds that it is dehumanizing sets up a debate that Lewis Mumford would have enjoyed. He was very much on the side of those who feel that technologies are worthwhile only if they empower humans to live autonomous lives. It is quite clear that both book and hypermedia have the ability to shape autonomous individuals.

To reject the book and embrace hypermedia transforms one immediately into an adventurer, a futurist, a chance-taker. The cultural stake in risk-taking is decidedly high. Those who have followed history are justifiably cautious about revolutionary technologies, because not all inventions turned out to be the remedies they expected.

The verifiability and fidelity of material have concerned scholars of all epochs. Buffoons, plagiarists and liars have worked alongside decent, honest searchers and scholars, and one suspects that the percentage of the dishonest has remained constant. Therefore, the fear that a fraudulent, interloping concept could dilute the quality of scholarly discourse to nothingness is more likely unfounded.

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It is the discourse that is one of the few devices through which verification can occur, and the book/hypermedia debate is providing the ideal platform for language specialists, sociologists, behaviorists, technologists, designers, artists and writers. And if hypermedia is good at anything, it is the ability to bring together for discussion diverse groups of people. But, like all media, it does that for the most specific and high-minded as well as for the most inconsequential. It finds ways to gather interest groups of experts, novices, amateurs and scholars of all ages, genders and nationalities, and gives each participant a direct voice. With that ability comes the responsibility to use it, and to use it wisely.

Therefore, the debate is not about the good or evil of book or hypermedia. It is really about the power lodged in language. Of course, those who are empowered by their social strata to comprehend the language system and language rules (which in turn obligates them to defend the tradition) are immediately

challenged. Being in power means having to repress any challenge. Not to do so means relinquishing territory all together or sharing it with other concepts. But, reviewing the history of media, many battles have been fought with the result that each medium has found or developed its appropriate niche and survived all prognostications. The power could not be wrested into one media arena — it had to be shared.

A rather young electronic technology is challenging the traditional control and power of the book. The institutional fear is that it will destroy language and its culture-building infra-structure. Therefore, proposals come forth to make hypermedia behave very much in the tradition of the book. But if hypermedia restricts itself and emulates the book, then it cannot escape the book's limitations and the traditional ways of organizing concepts.

It must dawn on scholars that the two-dimensional format of the book must have severely restricted the visual presentation of multi-dimensional concepts, and also hampered understanding and transmission of knowledge. Hypermedia, as it is observed now, can only be a shadow of its future potential. Using the evolution of photography as a guide, it becomes clear that hypermedia must escape the initial culturally-assigned role of following the rules of the book — as photography had to reject its first role of mimicking painting.

It will take decades before hypermedia metamorphoses into its own form of visual expression. Through history, society has been aware of the limitations of language and the yoke of its conventions.

Therefore, society has always invited either artist and poet, or visionary and inventor, to circumvent the rules, allowing for and tolerating the act of transcending language limitations. It is this creative act through which hypermedia's new metaphors begin to lift the veil from knowledge, revealing and disclosing new points for understanding.

One interesting aspect about the power of language is its capacity to gain strength through rules of prohibition — what can and cannot be done, what is allowable and what is transgression. When anything is challenged, the circumstance provides for an immediate discourse; the new is brought into a process of validation based on traditional criteria. They are in many ways inappropriate, because the ideal traditional model usually has little in common with the contexts, concerns and contents of an idealized transitional or revolutionary model.

Another fact about power: to exist and function, it requires massive cultural support. The book's power stems from its total integration into the cultural and social infrastructure. This power is not a privilege that can be either preserved forever or automatically removed. Preservation or removal is facilitated by a valuation by the greater number of constituents of a civilization — consensually arrived at, people voting with their feet, gravitating toward that which seems appropriate or sensible for the times. Thus emerges the social contract that binds individuals to the web of arteries running through the whole social organism; in return, they are assured that the organism will satisfy their anticipations and expectations.

Although this is conjecture, hypermedia will not be rejected by cultures or become culturally destructive as was the case with the early Esperanto experiments. Instead, hypermedia will provide new ways to encode complexities, allow for presentations of dynamic, constantly shifting data and give scholars the opportunity to develop multi-dimensional models to understand complexification rather than only simplification. The change from book to hypermedia culture will be seamless, virtually unnoticeable. It will take as much time as the traditional systems of education, law, medicine or science will need to reorganize themselves to respond to the hypermedia culture. Each of the major

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disciplines will actively participate in developing the new rhetorical rules, behavioral conventions and evaluation modes. Humans adapt to any tool, no matter how awkward; the human spirit

extends beyond the limitations of body and mind. Tightrope walkers, stilt-dancers, unicyclists, hang-glider flyers, skateboarders without much thought, even of gravity, perform their feats to the amazement of all.

The battle is about product (book) or process (hypermedia), and who controls one or both. The tradition of the manuscript, its single voice, its linearity, its identifiable word craftsmanship (or lack thereof), its multiplication to assure distribution and therefore wide opportunity for verification, are being challenged — but not necessarily destroyed. There is a distinct concern about the possibility that information and knowledge will become less reliable. Meanwhile, very few have the time, ability or inclination to verify intellectual resources. Most humans are schooled to

adopt a viewpoint without challenge. Questions about verifiability are serious, especially in this time of hyper-data-generation — more in one day than an expert has time to absorb.

If reliability turns out to be a problem, then the fact that it takes a good four to six years for a revolutionary idea to hit the bookshelf is most likely moot, and the whole problem must be resolved from the bottom up. One can anticipate that all institutions will make efforts to prepare their constituents for this hyperactive data world. As happens with the stock market, where decisions are based on both intuitive sensing of data and cognitive evaluation, schools will have to rethink and refocus the traditional learn-

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ing technologies to gear them for individuals who come to synthesis through the most lucid, critical thinking.

Unlike Europe, where, for example, the introduction of CDs made tape cassettes totally unavailable, America loves to invent myths and then to live with them. That is why computers, multi-channel cable television, CDs, sit side-by-side with river gambling boats, state lotteries, psychic readers, film and rock stars and virtual puppies. What makes the United States interesting is its wholehearted embrace of the new technology without discarding any of the earlier versions. This might be a function of the aggregate,

because industry can support a greater variety for its 250 million populace, keeping all forms of media intact and functioning.

The emerging interdiscipli-nary debate must start with the empowerment and au-tonomy of the individual citizen, then grow into a vision of the culture-building support system that will enable deep insight and understanding. And it will also accomodate, gently, the lighter side of human beings and especially Americans, who are inclined to entertain themselves to the extreme.

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