

Will Books Become the DUMB Medium ?

BY ELI M. NOAM

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**“Print is not dead.
Print is not dying.
Print is not even
vaguely ill.”**

—W. Crawford and M. Garnaw
[American Library Association, 1995]

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cholars and books have always had a symbiotic relation. More than 2800 years ago, in Nineveh and then Alexandria, libraries were the place where scholars congregated and formed the first universities. Later, after Gutenberg, books contributed to the emergence of universities as centers of the sciences. Today, inside universities vast numbers of monographs, edited volumes and periodicals are laboriously produced and lovingly consumed. A large publishing industry, much of it privately owned, has grown around this relationship.

It is thus perhaps a shock to contemplate that this happy situation is likely to unravel. And it is doubly ironic that this will take place just as information, knowledge and scholarship are more important than ever.

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But if we look clearly ahead rather than nostalgically behind, the conclusion is inescapable that books as a physical entity will become, in time, a secondary tool in academia, their role usurped by the upstart electronic media.

And as books cease to be the mainstay of the leading edge of knowledge, their role becomes primarily that of an entertainment medium, and not even one of the creative leading edge. Culturally, they descend to secondary status. And economically, the firms associated with them—publishers—decline.

This conclusion will not be readily accepted. Too strong is the emotional attachment to the concept of book. But consider another word loaded with positive connotation, bread. Yet the consumption of bread has declined, and its centrality as a food item is nowhere what it used to be.

I love books. I've written or edited almost 20 of them, and I own many, too many. So I don't like my own conclusion. Nor am I unmindful of following to the edge of the cliff in the footsteps of distinguished mis-prognosticators. Thomas Edison, for example, confidently predicted in 1913 that books would be rapidly substituted, as an instructional medium, by film. Later, radio, TV and simple computers were expected to have similar impacts. We are still waiting. Marshall McLuhan, in the *Gutenberg Galaxy* (1962) welcomed the demise of books as an end to homogenization, commodification, the nation state and practically everything else.

Anthony Smith, in *Goodbye Gutenberg* (1980), feared the worst for print, but was braced for it. Yet there are more books published today than ever before—65,000 in America alone—and more books bought (and possibly even read) than ever before, more than two billion of them. And the publishing industry reassures us and itself constantly, ritualistically, and publicly of the book's indispensability. So where is the problem?

It is characteristic of individuals, institutions, industries and entire societies to misjudge the future. We do so by simultaneously exaggerating, belittling and fighting change. On the one hand, we tend to succumb to the various merchants of hype, overestimate short-term spread of technology as to its salutary impact—"a helicopter in every garage"; "atomic power too cheap to meter"; "the Internet in every classroom." On the other hand, we tend to underestimate the deeper long-term impact of fundamental technologies.

The automobile and the radio were seen as convenient substitutes for horseless carriages or wireless telegraph, rather than as the agents of revolutions in cityscape and mass media, in living patterns and politics.

But when the realization dawns that the mere convenience is also a sorcerer's apprentice, attitudes change from benign wonder to hostile defensiveness.

Thus it was with new media from times immemorial. The old media, calling the shots, gang up on the new medium as uncouth, and glorify themselves as purveyors of culture. Even writing, when it replaced oral culture, was attacked. Plato, in *Phaedrus*, lets the inventor of writing be criticized by the ruler, who pontificates:

. . . This discovery of yours will create forgetfulness in the minds of those who learn to use it . . . You offer your students the appearance of wisdom, not true wisdom. They will be hearers of many things and will have learned nothing . . . they will appear to be omniscient and will generally know nothing . . .

When printing emerged it, too, had its detractors:

“. . . The world has got along perfectly well for six thousand years without printing, and has no need to change now.” (Filippo di Strata)

“Printed books will never be the equivalent of handwritten codices . . . The simple reason is that copying by hand involves more diligence and industry.” (Johannes Trithemius, *In Praise of Scribes*) from [Odlyzkol].

Later, when movies were being introduced and favored vaudeville to Shakespeare, traditionalists were outraged and sought a ban against its uncultured distractions. And when sound was introduced into motion pictures, musicians' unions agitated that “sound movies are economic and cultural murder” (Ithiel de Sola Pool, *Forecasting the Telephone: a Retrospective Technology Assessment of the Telephone*, Ablex Publishing, 1983). The telephone was said by a noted psychiatrist to drive people permanently insane. And when the radio arrived, researchers noted that “Parents have become aware of a puzzling change in the behavior of their children . . .” (A.L. Eisen-

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berg, *Children and Radio Programs*. Columbia University Press, 1936).

When television began in the late '40s, it negatively affected the dominant medium of popular culture, film, which tried to suppress it. When Ronald Reagan started to work for TV, he could never make a Hollywood movie again. He had to look for another line of work. At the same time, print, the dominant medium of intellectual culture, also crusaded against television, attacking it as a medium, not just its particular programs, channels or industry structure. (Neil Postman, *Technopoly: The Surrender of Culture to Technology*, Knopf, 1992);

Later, when cable TV emerged, it was *deja vu* all over again. The broadcasters, now the new media establishment, fought cable tooth and nail, ostensibly to defend free viewing, public interest standards and national cohesion.

Today, with computer-based multimedia in ascendance, the question is how they are treated. In the '50s and '60s, many believed that computers would surely create a 1984-like state, and computers' image was the centralized and all-knowing huge piece of equipment. Data protection laws were passed, based on the "Big Brother" image of technology, just as computers became "distributed." But when the real 1984 rolled around, the fear had become that 14-year-olds would use computers to start a nuclear war of their own.

Today, when computer usage is beginning to be democratic and when computers are becoming a communications device, the Cassandra industry is out in full force, and an avalanche of neo-

Luddite literature is rolling in, lapped up by traditional media. Extremist potential. Isolation. Impressionable children. Sex. Violence. Games. Anti-Authority. Information poverty. Commercialization. Bad grammar. Bad manners. Bad attitude.

This is not to belittle these concerns or to give credence to the similar myopic Pollyannas of the computer industry, but rather to observe that it seems that, predictably, the new media kid on the block is under attack by its elders. And just as predictably, these attacks will not succeed, and traditional media will be weakened as the new ones succeed. Thus it was with oratory, with theater, film, radio, broadcast TV and cable. And thus it will be with books.

Let's clarify the term. For purposes of our discussion, the term "book" refers to its classic manifestation—bound volumes of paper sheets upon which text is printed. (There are, of course, variations on that theme, but they need not overly concern us.) Books exist in many settings, and it is best to analyze them specifically rather than generically. So let us turn to the future of the book in the university.

Books exist in academia in four major types:

- Texts, as source material for analysis.
- Textbooks, for instruction.
- Scholarly monographs, for broader and deeper discussions.
- Academic journals and edited volumes, for narrow research findings.

The first type of book—source materials—are least affected by the emerging

electronic information technology. But even here, rare books will be increasingly stored electronically, for better protection and wider accessibility.

The second type will change enormously. Textbook publishers will gain. But textbooks will lose. The reason is that publishers' function in the future will extend far beyond providing books as supplementary aides to courses. Instead, the publishers will increasingly provide courses themselves. They will become course publishers.

The reason is partly economic. It is hard to imagine that the presently prevailing low-tech lecture system of university instruction will survive. Student-teacher interaction is already under stress by the widening gulf between basic teaching and specialized research. More importantly, the interaction comes with a big price tag. If alternative instructional technologies and credentialing systems can be devised, there will be an out-migration from classic campus-based higher education.

Electronic forms of instruction are inferior to face-to-face teaching (though the latter is often romanticized); rather, they can be provided at dramatically lower cost. At present, private universities charge a tuition of nearly \$50 per lecture hour per student, not counting most of the public and philanthropic support they receive, or the opportunity cost of students' time. With such Broadway-show sized prices—and without the latter's entertainment value—alternative providers inevitably will enter. It is likely that the commercial publishers will put together an effective and continuously updated teaching package, making the traditional teaching of universities look boring in comparison, just as *Sesame*

Street has raised the expectations of pupils for a lively instructional style. Already available on tape are the "Greatest Lectures by America's Superstar Teachers," distributed by a company advertising itself as "your own private university, staffed exclusively by a 'dream team' of America's best lecture professors." A curriculum, once created, could be offered electronically, not just to hundreds of students nearby but to tens of thousands around the world. It could be provided by universities seeking additional revenues in a period of declining cohorts, though probably not at first by elite colleges which guard their scarcity value.

The ultimate providers of an electronic curriculum will not be universities becoming teleuniversities (they will merely break the ice) but rather commercial firms. Textbook publishers will establish

contrast, the future is bleak for the publishers of serious scholarly books. Here, the market consists basically of individual specialists and of libraries. When it comes to individual buyers, scholarly books will have to compete against the many other sources of information available to readers, many of them more rapidly disseminated, easier to search, easy to re-purpose, and more suited to the short-attention-span generation facing the information glut society.

Again, one advantage for electronic dissemination is that its pricing could be highly differentiated once technology makes arbitrage and resale inconvenient. An online, download relationship can support multiple prices, just as with the airlines, and in contrast to the relatively primitive hard-cover/soft-cover price

annually, with a doubling period of 10-15 years. Comprehensive library collections have become unaffordable. But at the same time, electronic alternatives have become powerful in storage, broad-ranging in content and efficient in retrieval. Therefore, libraries are gradually shifting from investment in the physical presence of information to the creation of electronic access. Soon the combination of laptop and phone line will serve just as well—anywhere, anytime.

This will lead publishers to issue many books on an online basis, and charge the reader per use, or the institution on a site-license basis. Readers would peruse the work on comfortable handheld screens, or print it out as a near-book.

Many authors will move to self-publishing. Especially the better-known scholars do not require the marketing role of publishers. Desktop publishing is reducing the technical importance of publishers; and online access reduces their role in distribution. Where authors seek rapid recognition rather than below-minimum wage royalties, they will often even give the product away. In other cases, a download charge will exist. The final product may turn out to be a bit sloppier, but most authors and readers would gladly trade split infinitives for speedy publication. In many cases, departments, centers or professional associations would become online publishers. Yes, academics crave the prestige of a publishing pecking-order. But these could be provided as well outside the traditional book model. Exclusivity, standards and gatekeepers do not require ground-up trees for their survival.

The fourth type of book in the higher education sector is the bound academic journal. This is the mainstay of research. With the expansion and speed-

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sophisticated electronic courses using the most effective and prestigious lecturers. They could control the resale market by customization, and by providing it online to subscribing students only; this permits sophisticated price discrimination. And they could charge substantially higher prices than for a mere book.

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differentiation system for physical books.

The second major category of buyers of scholarly books are academic libraries. That market must by necessity contract. In the past, it was said that a university was as strong as its library. But here, too, the economics and technology change everything.

Most branches of science show an exponential growth of about 4-8 percent

up of research activity and merit-based promotions, the journal system has grown beyond its own long-term economic sustainability. The entire economics of scholarly journals are bizarre, just waiting to collapse.

Each year, an estimated two million scholarly articles are being published (though not necessarily read). One calculation for the cost of processing, handling and storing one article is \$50. This means a cost of \$100 million for one complete set of articles, for a single year, and rising. This is clearly not within the realm of economic feasibility of any physical library, even not of the official national libraries that free-load on the copyright system.

To get a sense of the quantitative trend: *Chemical Abstracts* took 30 years (1907-1937) to reach its first one million abstracts. The second million took 18 years. The most recent million took only 1.75 years. Thus more articles on chemistry have been published in the past two years than in humankind's entire history before 1900.

No university can afford this flood. And what makes this all the more galling is that universities pay for the production of much of this scholarship through their staff and faculties, and then they must buy back the fruits of their own investments. Meanwhile, the prices for journals keep getting higher, as specialization reduces circulation to ever-narrower slivers of specialists, and as commercial publishers consolidate profitably.

Traditional print publishers sell an article, on the average, for \$4000 per print article, not counting the cost of storage to libraries. In contrast, one estimate for the cost of putting out an article in electronic form is \$300-100—much lower. Thus, given the cost disparity, electronic distribution is inevitable, and indeed is happening rapidly.

Here, too, it is unavoidable that commercial publishers will be bypassed by authors, departments and professional associations. Many people believe that the tenure system and the whole pecking order of academia depends on the imprimatur of

prestigious publications. But it is false to equate this system with paper publications. It's the selectivity, not the medium, that counts. The most prestigious journals can be maintained electronically just as well as physically, on all the same principles except for the slowness, and often with a much greater circulation.



he advantages go beyond economics. Electronic journals are also superior in accessibility and storage cost, and they are vastly superior in cross-linking to references. This, after all, was what led to the invention of the World Wide Web in the first place, when physicists in Geneva wanted easy access to referenced articles.

Let us add up these trends. Printed textbooks will shift into electronic-based courses. Scholarly books will move to electronic versions. And journal volumes will become electronic. The conclusion therefore is that there will be a significant shift away from books in academia, the inner sanctum of the book culture.

In Defense of the Book

In making these arguments, one inevitably provokes impassioned defense of the book. Academia and books have enjoyed a symbiotic relationship. It is possible to imagine universities without buildings, sports, even research and teaching (though not both). But without books? Books are just different. How can one measure their standards with the petty yardsticks of micro-electronics and micro-economics? It is easy to appear as yet another dismal economist or technological determinist and to invite, as a response, a ringing reaffirmation of the importance of books in education, personal growth and intellectual discourse. To make such arguments feels good but is beside the point. It is not research, teaching or publishing

that will be under pressure—they will be more important than ever—but rather their present main medium, the bound printed-paper volume.

A second type of response is practical: electronic presentation of information is not user-friendly. You can't curl up with a computer screen; you can't take it to the bathroom; it's hard on the eyes; it can't be skimmed or leafed through; and it can't be folded, spindled or mutilated. True. But this is likely to be a temporary disadvantage. In time, light and flat screens, digital paper with multiple pages, high resolution screens, and the ability to mark up and highlight will duplicate many of the physical conveniences and looks of the book without being paper-based. "Virtual books," but not books. Thus to rely on the negative ergonomics of electronics is a risky proposition. The tables may soon be turned.

A third objection is that today's work might not be readable under tomorrow's electronic technology, and will hence be lost. Print has been tried and found true over centuries, but digital storage has no track record. Such fear is overblown. Future display will of course be different than today's, but conversion from old standards will be technically and commercially profitable. The greatest loss of information over time is not its physical destruction but its unavailability—the difficulty of finding information in obscure locations or inside huge collections. Electronic searches can solve many of these problems. Thus, it should be safer to store electronically than on paper, if the immortality of the information is the goal.

A fourth line of defense is to extol the advantages of the written word over pictures. Let the mind do the picturing instead of force-feeding it with graphic images. This argument is a carry-over from the struggles of print culture over television. Like generals fighting the last war, defenders of the book still fight TV and confuse writing with the print/paper

technology. There is plenty of writing that takes place over electronic screens, much of it done by those same young whose brains had supposedly been fried by TV. The written word has been enhanced by computer technology, not reduced.

The Reincarnation of The Book

At this point a likely objection is that all we are talking about is a paperless variation on the theme "book," different for sure, but a book nevertheless. It's as if all we did was change the type of paper. What then is the big deal? This might be true if change would stop at such a point. But that is unlikely. The horseless carriage and the wireless telegraph became more than mere improvements

on what they replaced but entirely different things, because they were so much more powerful. So it will be with the paperless book. Content and format are interlinked, and new content follows new format possibilities.

Electronics can easily accommodate writing, but also a lot more—moving images, pictures, sound—multimedia. And such capability will be used soon, emphatically and creatively. Since speeding up the flow of information to the human brain is becoming essential, and writing shows no sign of change, this can be best accomplished by multimedia forms of communication with more visual and symbolic information. The future therefore belongs to communications services that can provide parallel information tracks, and pack them as

tightly as possible for the brain to absorb.

And as these technical possibilities unfold, the place for leading edge artistic creativity will be in creating new types of expression, in the multimedia that combine text with graphics, sound, images. It is here that the creative talents of the next generation will push the envelope of expression.

And as that happens, traditional books could well become the province of the past—reprinting the classics of earlier generations—of the comfortable content, like Muzak in the age of rock, and of readers averse to both new wine and new bottles. In that scenario, books become primarily vehicles of popular culture, while electronic media are the vehicles of scholarship and creativity. How ironic would that be, after book culture disdain-

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fully lording it over popular video culture, that the tables would be turned.

Let's face it, books are yesterday's technology—bulky, environmentally suspect, impermanent, expensive, hard to find, forever out of print, slow to produce, slow to write and slow to read, and a strain on the eye. Gutenberg's Bible, still one of the most beautiful books ever made, is a wonderful object to behold. And yet, does that not point to the static nature of the medium, to its absence of innovation? Yes, the book has been a pretty good design, like the canoe, or the clipper ship. And it had a pretty good run. But suppose a more powerful design comes along? Just because past

be fixed, but the medium itself.

Imagine, instead, light and luminous panels of multiple pages, comfortable in the hand, with clear text, bright pictures, and attractive sound and video. It is convenient to access texts, to highlight, to cross-reference, to store and to browse. Its lettering can be adjusted to the reader's eyesight, and to the significance of the passage. Would such a medium not be superior in most respects to the traditional bleached wood-pulp/black chemical stain technology? This is not a Jetson family fantasy. Such devices are available in prototypes. I have held them in my hand or more precisely, with two fingers. They are near-

tual food chain. Adherents of electronic media received no respect, their media having been hijacked by the three lowest-common-denominator TV networks. Even today, parents feel guilty if their kids are educated from media other than books. But now, change is in the air, often propelled by the same kids. Electronics have begun to stand tall.

Books will survive, of course, like the radio, of which there are quantitatively more than ever, (five per household) but without its past centrality. Books are likely to remain as an entertainment medium, novels for couch, beach and bus. And, of course, where an exquisite presentation is part of the experience, such as for poetry or art, books will endure. But when it comes to the pure informational aspect of books—storing and accessing useful information—the print/paper technology will lose out. And in what we now call literature, many of the most creative contributions will move from paper/print to new forms of expression. In that process, books will become the comfortable medium, the formulaic medium, the unchallenging medium. And, yes, the dumb medium.

This change will not come overnight. Nor will it be complete; media tend to coexist. Nor will it be uniform; the hard sciences never had as much of a loving relation to the book as the humanities do. And some great writers, even young ones, will stay exclusively with traditional forms of delivery. But the change will happen, whether we like it or not. We in academia will hate it, because as a profession we are beholden to books. We read them, we write them, we buy them, and our status is often derived through them.

But is it not knowledge that we really cherish? Books were merely the receptacle, the transmission vehicle, the storage bin. A new and creative medium is knocking at the door, and we should embrace it, even as we mourn for the passing of an old love. ■

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predictions were off the mark does not mean that the book will be shielded forever, if something better, stronger and cheaper comes along. Aren't book publishers already the slowest ship in the convoy to the information age, disdained, dismissed or dismembered by the new media? If kids (and adults) do not read books anymore—assuming they ever really did in some past Golden Age, in the tiny historic sliver between mass literary and electronic media, spanning roughly 50 years—well maybe—gasp!—it's the book's fault as a medium? Not the content, mind you, that could

ing commercial release. In the near future they will also cross-link to other sources of information, art and entertainment. They would then be interactive with other creators, permitting dynamic network publications rather than static linear display, and could generate powerful tools for instruction and entertainment (of the kind shown in Neal Stephenson's *Diamond Age*, where a street urchin, raised up by a magic book, becomes the leader of political renewal).

In the past, electronic media were definitely on the low end of the intellec-