Testing the Spirit of the Information Age

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Introduction

Every age has a "spirit." The Information Age seems to be a more extreme case than most eras, with the constant barrage of messages promising social and individual salvation. Information and information technology are heralded as great, new possibilities not just for reform but perfection, with some even predicting the end of physical death (using information technology) by the end of the next century. The intensity of our current period's fascination with technology is partly due to the technology itself—ideas or sales pitches get out to more people more quickly than ever before in history, and, as a result it is easy to be blinded by all the promises and hype. It is no accident that ideas like "ecommerce" and "knowledge management" are unifying concepts for many in this era, but although there is nothing intrinsically wrong with them, there is something amiss with how they are discussed. This essay cmments on the latter issue, the hyperbole of the Information Age, from three perspectives: 1) as a consumer of information technology; 2) as an educator in a field (archives and records management) utilizing information technology; and 3) as an individual convinced about the relevancy of basic Judaic-Christian beliefs as one means to shift critically the many conflicting

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and confusing messages promulgated by the so-called modern Information Age.

The Computer Store as the New Church for Our Information Age

Visit a large computer store on a busy weekend. There we can watch the enthusiastic (and we could use this term twice over, following either the more modern sense or the older 18th century notion of ebullient and irrational religious followers)[1] crowds as they roam about looking for the latest attachment, software, or new basic hardware to empower their lives. The discussions between customers and sales clerks build into a low chant-like hum, the new mantra of the Information Age, as people look for faster and more powerful computers. A reading of books and magazines perused by the cyberelite — the new priesthood[2] — will reveal that computers are regarded as more than mere tools to help us in our work or for us to use for entertainment. Computers are the means for reaching a new kind of reality and community. Computers are there to assist us to escape our physical being (even death) and to replace (with improvements) even our most intimate relationships. It is, as Mark Dery states, a new "theology of the ejector seat."[3]

Society has been discussing the Information Age for forty years, with ever greater intensity and concern about the implications of the growing dependency on information and information technology. First, we noted the seeming shift from an industrial to a service society. Then we focused on the increasing numbers of people working in the service economy who were involved with information. Next we considered that we were on a great Information superhighway — and then the debates and predictions about where this highway was leading started. In our most recent phase, the Information Age has become a political issue, as the use of information technology is being equated with educational attainment, business acumen, and diplomatic skill. One's ability to use a computer is seen by many as *the* critical skill for any level of success in this life.

There is a certain hubris in all this. We have seen *our* age as *the* Information society, when *all* ages in reality have been dependent on information for communication, community, conflict, and commerce.[4] Two historians have described the labeling of our era in this way: "Rather than attempting to find a single, overarching definition of information, applicable across time and culture, we must seek its unique meaning in each age, where technology and culture combine to isolate different kinds of information."[5] So what makes this a distinct period to be termed the Information Age?

Our most basic instincts have suggested that the current age deserves such

a descriptor because information technologies seem so powerful, and we have been on a steady expansion of information technologies with rapidly increasing improvements. But statements such as this one by software engineer Frederick Brooks—"The average American can now afford not only a computer of his own, but a suite of software that 20 years ago would have cost a king's salary"[6]—reduce it all to a simple metric, rising computing power and declining costs. Greater speed and lower costs is a simplistic way to look at any issue, but this is how we most often characterize the core of the Information Age. These comparisons look powerful, and we see great progress. But often these comparisons do not indicate what the increasingly powerful and cheaper computers are being used to do or the broader impacts their use and the emergence of information as the commodity and symbol of the current age might have on us.

In fact, it is often difficult to see through all the hype or hysteria associated with the current version of the Information Age because we are both bombarded and blinded by the *promises* of the Information Age, generally through advertisements that Neil Postman characterizes as the new religious parables of our time.[7] We see that IBM's first PC (1981) cost $5,000, possessed a 4.77 megaherz processor, had 16,000–256,000 bytes of memory, and used two 160,000-byte floppy drives for storage; then we see that a 1998 Packard Bell 820 cost $900, came equipped with a 333 megaherz processor, had 64 million bytes of memory, and provided 4.3 billion bytes of storage. In this we pat ourselves on the back and assume great progress for society. Really? Isn't the critical matter *what* it is we are doing with the equipment? These constantly improving personal computers can be used to write important research reports on medical cases, benefiting many, or to develop and support children's pornography sites on the World Wide Web, harming society and only benefiting the bank accounts of the pornographers. There is, of course, a substantial difference between such activities.

Advertisements try to capitalize on the prominent slogans of the time in order to grab attention and to attempt to sell a product. "We make the hidden obvious," reads an ad for electronic document software in the November 1, 1998 issue of *KM World*. "We know what you're looking for," declares an advertisement for a financial service in *The Economist* of 14–20 November 1998. In fact, as has been well documented, advertising's chief objective is to try to sell products to people who do not need or who do not know they need them. Many commentators have tied together shifts in population, the development of an industrial society, *and* the growth of information and communications technologies as the buttress of the modern consumer movement.[8] That the World Wide Web's development has shifted from a government-sponsored to a capitalist-private venture seems to suggest that advertising and the modern Information Age are developments intertwined and impossible without each other.

The Information Age information-oriented advertisements are more extreme examples of this consumer ethos, in that they reflect the greater promises made by Information era pundits like Bill Gates and Nicholas Negroponte who are either vendors of products or who are closely tied to the marketplace. Look at these examples, suggesting the mysterious wonderment associated with computers. "In the newspaper business, old information is what you wrap fish in," declares an ad for a software company in the 30 October 1998 issue of *USA Today*. "In the information revolution a workforce should be trained to win," announces an advertisement for an industrial technology firm in *The Economist* for 10 October 1998. Does making the hidden obvious have implications for the violation of personal privacy? Does someone else knowing what you are looking for make you somewhat insecure about your own ability and knowledge? Implied in such statements are threats, of course — that if you do not buy these products, you will somehow be lost, far behind the competition, or be greatly inconvenienced. These statements do not tell us how we will be better, or if we will become better — they merely promise something we might be lacking.

These types of comments suggest the real colors of those capitalizing on the promises of the Information Age, in order to sell something. Is old information really that useless? We see a tyranny of the new, constantly guiding us to look to the future, reminding me of computer scientist Thomas Landauer's book, *The Trouble with Computers*, in which he argues that the greatest constant in this era has been the promise that computers will make our lives and jobs easier and more efficient — a promise he sees as unfulfilled.[9] Perhaps we need a companion book, entitled *The Trouble with the Information Age*, detailing all the promises, failures, and catastrophes attributed to the period. What are we trying to win, except if we envision ourselves as another Bill Gates? Is it his "road ahead" or "business at the speed of thought" that we are really after, or a more meaningful existence suggesting that at times we need to consider where we have come from (the "road behind") or to approach our business in a more leisurely and careful way.[10] This is why Neil Postman in his latest book writes: "We may wonder ... why the late 17th century and 18th century are not commonly referred to as the age of information. The answer, I think, is that the concept of 'information' was different from what it is today. Information was not thought of as a commodity to be bought and sold. It had no separate existence, as it does in this age; specifically, it was not thought to be worthwhile unless it was embedded in a context, unless it gave shape, texture, or authority to a political, social, or scientific concept, which itself was required to fit into some world-view."[11] One may argue that this is an oversimplification. However, my own observations of the writings on the modern Information Age suggest that information is both a soft concept and, perhaps, because of its ambiguities, a concept that is prone to be used in widely divergent ways — from

scientific research to advertising slogans.[12] It is perhaps why advertising and information technology are so closely connected: advertising jingles, thought-provoking television advertisements, and print advertisements are necessary not just to *sell* products but to *explain* them as well.

The Information Age and the Electronic Sweatshop

Now we get to what I think is one of the great lies of the Information Age. The Information Age has promised to make our lives much easier, but in fact we have the potential emergence of a vast electronic sweatshop — where people are always connected, face long hours, and are made to pay social, personal, and psychological costs. Technology becomes our reason for being, and we are portrayed as machines. An advertisement for IBM declares—"A lot has happened while you were offline"— accompanied by a photograph of a man, with an extremely worried look, stepping out of the shower (*Wired*, November 1999). "After a while you ask yourself: Do these people ever *sleep*?" declares an advertisement for a software engineering firm in *The Economist* on October 2, 1999. An ad for an information technology products company includes the following message: "Family Room. Office. Daycare. Technology that becomes a way of life" (*Wired*, November 1999), and features a photograph of a bucolic family scene with children playing and the mother hunched over a laptop working. It is no accident that employees of one of the largest high technology companies have been termed "microserfs."[13]

It is because of matters such as this, that we read about people in the computing industry, among other businesses, facing higher rates of divorce, social dysfunction, and medical problems— all handled by the promise of higher salaries and stock options. In the Information Age we do not seem to learn — remember the costs of the disruption in the aerospace industry where highly educated and highly paid engineers were suddenly out of jobs? We know how volatile the computer industry is, and the uncertainties of working in it, even with pots of gold promised at the end of the rainbow, seem to be a high price to pay.[14]

So, we have many promises being thrown at us that will be fulfilled if we get on the Information Age bandwagon. Computers can replace people, we can always work, all this information will help make us better decision makers, and because we can get information nearly instantaneously we will be better informed. Even in the business of educating someone, we have a new kind of literacy. According to the U.S. Department of Education, "Technological literacy ... has become as fundamental to a person's ability to navigate through society as traditional skills like reading, writing, and arithmetic."[15] What this does not answer is whether technology is a set of tool skills to be learned to help do

other things or whether it is an end in itself. It appears that information technology shifts more toward the latter. As Robert Logan, a disciple of Marshall McLuhan, summarizes: "We can no longer divide work and learning. Life in the computer age only becomes meaningful when we integrate work, learning, and leisure time...." [16] What he means by this is that we cannot distinguish one from the other. While we play, we should be working at the same time (the television ads showing people on the beach with their laptops come to mind); or, as he implies, we should *always* be working. All of this leads to some odd things, as when Postman addresses the quest for 500 to 1000 television stations. "Is this a problem that most of us yearn to have solved?"[17] Of course not, since the 50 or 60 current cable channels are filled with old and mediocre programming with no educational *or* informational value.

The Information Age and the Loss of Humanity

If we mindlessly accept all the promises of the Information Age, we may seem happy (even content) but we may be missing much of what makes us human. Most people recognize the photograph of the space shuttle *Challenger* as it explodes seconds after launch, suggesting what happens when we misplace our faith in technology or organizations that seem to typify the technocratic approach to problem solving.[18] The Information Age joins together technology and information. The latter may be a soft concept, but technology and its potential uses or misuses are particularly concrete. Clifford Stoll, a computer scientist, dealt head on with one of the problems when he wrote that "This information highway, which delivers damned little information, is said to be the roadway to power in progress. After all, information is power. I don't believe it! Information isn't powerful. Information isn't power. Powerful people are seldom informed.... Information is power? The whole idea is false."[19] Stoll gets us to something more fundamental: human nature. Information is meaningless apart from humans, but humans, with or without information, are capable of great injustices, cruelties, and just stupid decisions.[20]

It is interesting that even in the Information Age, information is difficult to define. Even specialists conclude that "though information fascinates many social, biological, and physical scientists, no interdisciplinary agreement on basic concepts seems likely, and no unified theory appears imminent."[21] Every discipline and every group uses information as a critical and unifying concept, but few have substantial or concrete working definitions. Yet, we seem able to continue to make great promises about what information will do for us. Meanwhile, newspapers and other news sources, television, advertising (remember those parables?), and the World Wide Web spit information (or something) at us at a remarkable rate.

We must not forget that most of our information sources are the products of flawed or fallible humans. We reside in an age in which we are beset by many questions, not the least ones fundamental to what information really is and does. Philosopher Michael Heim, who has written two books on information technology, helps us get to the heart of the real issues: "Infomania erodes our capacity for significance. With a mind-set fixed on information, our attention span shortens. We collect fragments. We become mentally poorer in overall meaning. We get into the habit of clinging to knowledge bits and lose our feel for the wisdom behind knowledge."[22] Here we have several critical matters—the mania (which is not natural) with information, the fact that this mania can distort meaning, and the concern that there really is much more beyond information—that we ultimately miss wisdom (understanding in a deeper sense). The Information Age is still focused on bits and bytes or in breaking everything into manageable fragments that we can automate. The richness and utility of information is often forgotten in the quest to manage it in an efficient manner. If we are so taken with information and information technology, when will we know precisely its meaning, the consequences of its uses, and what is it we are doing? Despite the hundreds (thousands) of studies about information and its creation, use, and maintenance, we often find ourselves more in the dark about the Information Age and its success. Another technologist, Anthony Smith, writes: "The aura of knowing triumphalism that is made to surround the information idea tends to neglect the continuities, the realization that there are many things that do not change, and others that change in unforeseen or unacceptable ways. It is the language chosen that hurries the cause onwards... It is what the writers of the Bible would have recognized instantly as idolatry."[23] Idolatry, from the viewpoint of the Biblical writers, is the worship of false, manmade gods, such as the familiar story of Baal (the golden calf) suggests (Exodus 32:7–29). We make these gods because we are estranged from a sense of God and we make a new god in a familiar image. Whatever one's religious viewpoint, it is not difficult to relate to this activity because it has been so common in human history as ideologies, political systems, and other fundamental perspectives of the world are elevated to some sort of sacred status. Isn't this what we often do to information technology?

Two commentators on modern information technology give us this perspective on such matters. People wanting cyberspace are "characterized primarily by a faith in their ability to consciously rechoose their own reality," states Douglas Rushkoff.[24] "In a world increasingly dependent on digital technologies, the esoteric knowledge and arcane terminology associated with computer science confers on it an almost religious status," observes Mark Dery.[25] Cyberspace has become a kind of new heaven on earth, the heavenly city promised by Augustine or imagined by the eighteenth century philosophers (just as Mitchell's *City of Bits* suggests).[26] It is one reason why there have been

so many writings on the religious implications of information technology and its use.[27] As one of these authors relates, the common problem with the fixation on cyberculture is a "mistaking [of] technological possibilities for social or spiritual ones." He sees that "Gnostic lore [the concept of self-knowledge] also provides a mythic key for the kind of informania and conspiratorial thinking that comes to haunt the postwar world, with its terror of nefarious cabals, narcotic technologies, and invisible messages of deception."[28]

And we have taken this worship of information technology to extremes, as a best selling text by Ray Kurzweil indicates: "Actually there won't be mortality by the end of the twenty-first century. Not in the sense that we have known it.... Up until now, our mortality was tied to the longevity of our hardware.... As we cross the divide to insatiate ourselves into our computational technology, our identity will be based on our evolving mind file. We will be software, not hardware."[29] This statement is both astounding and revealing about many of the agendas associated with leading figures in the current Information Age. Ray Kurzweil is no hack: among other things he is the inventor of the First Music Synthesizer capable of recreating the grand piano and other orchestral instruments; author of *The Age of Intelligent Machines*, which won the Association of American Publishers' Award for the Most Outstanding Computer Science Book of 1990; the recipient of the Dickson Prize, Carnegie Mellon's top science award; and The Massachusetts Institute of Technology named him the Inventor of the Year in 1988. Kurzweil also has nine honorary doctorates and honors from two U.S. presidents. Nevertheless, this brilliant man has computers living our lives, producing our art, and making our decisions. We have invented the computer and now the computer may re-invent us.

Others have noted the problem of a near idolatrous view of information technology. Two educators provide this perspective of the computer in the classroom: "Students are mesmerized by the silent hum of a smoothly running machine that gives them the illusion that they can control their own destiny and deny their mortality. So-called knowledge-based technology represents the ultimate solution to all of their problems—professional, financial, technical, social, political, and even geopolitical."[30] All of this has been so hard to resist, because we have tied the Information Age up with other major modern belief systems: democracy (the virtual New England town meeting is proposed), capitalism (computers tied to a win at all costs approach), progress (a linear line to utopia), and education (learning resolves all social problems).

Let us look at what has happened to reading in the current Information Age. With all this information, reading seems to have become lost (and, in fact, many want to eliminate leisurely or linear reading in favor of other ways of acquiring information by whatever means possible). Journalist Michael Pollan argues that "I found reading ... to be a vaguely sensual, slightly indulgent pleasure, and one that had very little to do with the acquisition of information.

Rather than a means to an end, the deep piles of words on the page comprised for me a kind of soothing environment...."[31] One can discern that Pollan is missing something in the new fascination with information. Indeed, something has been lost. Again philosopher Michael Heim finds that "Books in the medieval period were far from indifferent receptacles of information. Reading was a practice in the strict sense of the term.... Active reading was connected with prayer and the transformation of the spirit."[32] Now the transformation of the spirit can only occur if you take your brain out and replace it with a computer. The only positive thing we can say with this fixation with electronic information is that it has generated a renewed scholarly interest in books, print, reading and other related matters. The scholarship has engaged in a debate with the Information Age pundits in a way that also suggests a sense of loss of the traditional printed book and its reading.[33]

But we are at the opposite end of the spectrum, not transforming the spirit but eliminating it. We can look to the software engineer and scholar David Gelernter, a victim of the Unabomber, who argues that technologists have made some people richer and happier, while eroding any sense of a spiritual ability to resist technology when it brings dangers or creates problems.[34] Ray Kurzweil is obviously searching. So are many others. Journalist John Seabrook, in his book *Deeper*, describes his search for meaning on the World Wide Web: "In the beginning I felt that special lightness of hope and possibility that new communications technologies seem to be uniquely capable of inspiring, a kind of spiritual feeling.... By the end ... I wondered whether the feeling had been an illusion, and whether I and countless others had in fact been duped by capitalists into requiring ever better ... technology to maintain our 'religion.'"[35] His reference at the end is, of course, one to the constantly changing generations of computers, each with the latest geewhiz device with its own promises, that seem to click by in months. That an intelligent person would seek meaning through a machine and on something like the World Wide Web also suggests the kind of "snake oil" (borrowing the notion from Clifford Stoll) sales made by those advocating ever increasing use of and dependence on the Web. George Gilder, a long-time commentator on technologies, sees the loss of a connecting spine for our society. The "culture we have created with these machines is dreary at best. Why doesn't our superb information technology better inform and uplift us?" "The most dangerous threat to the U.S. economy and society is the breakdown of our cultural institutions—in the family, religion, education, and the arts—that preserve and transmit civilization to new generations."[36] This is why we have seen a rebirth in scholarship on the history of the book (mentioned already), more reflection on the concept of a real physical place, and greater thought about the concept of community. All are threatened with loss or replacement by surrogates, sometimes no more real than a flawed copy (think of email conversation as a replacement for face to face conversation). Of

course, any of these things—the book, a place, or a community—can also be exaggerated into our own version of the Hebraic golden calf, but none of these promise as much spiritual enrichment as what those who advocate information technology claim for their machines.[37]

Man as machine or computer as human suggests some extremely warped notions of technology, ones that conjure up all the worst fears of the computer named Hal in the thirty year old movie, *2001*.[38] Arnold Pacey's brief book, *The Culture of Technology*, provides one of the most well-rounded efforts to demonstrate that technology does not operate on its own, that it is a product not only of technology but of cultural and organizational aspects.[39] But I think we need to acknowledge that unless we step out of the box that normally frames our thinking about technology, there is still something missing even with this way of viewing technology. The current fascination with transforming man into a machine or in assigning God-like attributes to information technology, especially the World Wide Web, reveals the limitations in how we consider the technology.

The Need for Spirituality in the Information Age

Having a more readily identifiable Spiritual aspect helps us to touch on all the dimensions of life, unless we view religion as merely a human creation. Historian David Noble, in *The Religion of Technology* (already cited), argues that technological innovation has been connected to religious enthusiasm for a thousand years and he hopes to see it separated sometime in the next century. To a certain extent I think he is right, as some of my comments would suggest, indicating that individuals like Kurzweil are trying to connect machines, us, and godlike qualities. However, I think more commentators see a hollowness in today's technology, akin to T.S. Eliot's oft-quoted lament about the loss in the quality of life, including a reduction from wisdom to mere information.[40]

Perhaps another source of information, knowledge, or wisdom (I leave it open to you at this point)—the Bible—can provide some answers to some of these questions. Christians have two well known Biblical accounts that seem relevant to our consideration of how we view information: the description of the Tower of Babel early in Genesis and the occasion of Pentecost in the second chapter in Acts. One relates to humankind's efforts to gain the knowledge that belongs to God, while the other relates to a gift from God enabling communication. As is well-known, Babel is the Hebrew word for confusion or mixing, directly relating to God's intervention in the tower building by confusing languages and causing the dispersal of humankind. Pentecost, on the other hand, is nearly the exact opposite. It is the event whereby Christ's disciples are

empowered by the Holy Spirit and given the gift to communicate in many languages the good news offered by God of a salvation from sin and eternal damnation. One is a lesson in our own self-aggrandizement, the other in understanding our limitations and needs. These lessons may have much to say about our use of information technology and the power with which we imbue it in our society.

We invoke Babel imagery constantly in terms of the Information Age. The "impersonality of the electronic highway seems to make people less discrete in their interactions with others than when they communicate face to face," writes a scholar in the development of language and cognition.[41] "More and more, the contemporary university has become an ivory tower of Babel," writes an educator and a scholar in comparative literature.[42] I have seen no references to the Pentecost story vis-a-vis the Information Age, perhaps because the allusion has not been taken up by any notworthy writer or championed by one of the Information Age pundits. The Babel image probably has been prevalent because of the off-cited short story by Jorge Luis Borges, "The Library of Babel," a struggle to discern meaning and order in the writing, printing, and organization of knowledge via books. In this short story, everything in the library is false.[43] The essay has often been referred to, especially in comparison to the emergence of the Web and the vanities associated with it.

The tower (Genesis 11:1–9) is an expression of misplaced faith in technology and its utility in having humankind either reach God (understand God) or become godlike (assuming God's place). These commentaries on Babel provide some help in comprehending the story: The "building of the city and tower is an expression of powerful human impulses, at first toward safety and permanence, eventually toward full independence and self-sufficiency..." writes a commentator on contemporary society. "Through technology, through division of labor, through new modes of interdependence and rule, and through laws, customs and mores, the city radically transforms its inhabitants.... The founders of Babel inspire to nothing less than self re-creation...."[44] This is what many proponents of the use of information technology seem to be about, either directly (out of reformist tendencies) or indirectly (because of more utilitarian motivations such as making money). A historian provides a more direct critique of the relevancy of the Babel image for the modern Information Age, by arguing that the current era "represents a new Babel project." "Information Age humans do show signs of overweening pride," writes this scholar. The Information Age experts have an "eschatology. They claim to know where history is going." "This new Babel will most likely not aim to build a city that reaches to the heavens but will aim to raise humanity to the status of divinity."[45]

The Pentecost story says something else. In this set of events, God empowers His people with the means to have something to say, completing a search for meaning. Jesus promised the Spirit to His followers, serving as Comforter

and Counselor, continuing to teach Jesus' followers and reminding them of what He had said to them (John 14:25–26). Moreover, these disciples were empowered to speak in tongues other than their native language (Acts 2:1–3). Pentecost is a promise, a sign, to God's people as well as a source of knowledge for them to operate. Meaning and communication may be sought after aspects of the Information Age, but they have hardly been achieved to any extent except as objectives of many immersing themselves into the use of information technologies.

Now what am I getting at here? I am saying that there is more to life than what we see, but I am not referring to those virtual places on the cyberscape that we made. Mark Slouka, in 1995, wrote: "Since 1992 alone, the number of newspaper articles mentioning the information superhighway had risen over 2000 percent, nearly every one filled with the kind of positive-thinking, forward-looking, onward-marching rhetoric usually reserved for reelection campaigns and times of national crisis." He continues that "We accept — it's almost an article of faith with us— that the information superhighway will make everything easier, faster, better; that it will make us (and our children) more knowledgeable, more imaginative, more creative...."[46] This is a definite contrast to the studies that have been done about individuals who become self-absorbed in the Internet, not finding happiness but often discovering despair and confusion.[47]

I am not arguing that people should become Luddites— that may simply be another form of false hope, evident in how we have tended to romanticize what it was that they were doing.[48] I know that information technology is of benefit to us, in many obvious and unseen ways, the kind of ubiquitous computing that some have described mostly in positive terms.[49] But we need a basis for skepticism. Jerry Mander, *In the Absence of the Sacred*, states that "Since most of what we are told about new technology comes from its proponents, be deeply skeptical of all claims." He continues: "Unfortunately, the major question about computers is not whether they serve you or your organization or your business well.... We must look at the totality of how computers affect society, and life on earth."[50] But what is our basis for doing this? For me, it is my personal hope in personal redemption that provides a foundation for evaluating how and what I do, how and what I teach. For others, it may be a moral or ethical approach to information technology and its uses that provides their hope. The former is not something I often can discuss in the classroom directly, but it is the basis for what I choose to say, especially in the realm of ethics and morality, about how people should approach the promises of the Information Age.

The continuing onslaught of hyperbole about the Information Age perhaps provides an opportunity for more critical assessment of what this era promises and delivers. Christian social and political activist Jim Wallis, in *The*

Soul of Politics, argues that "There are periods in history when social crisis threatens to unravel society. But such times are often also eras of transition, invitation, and opportunity. The New Testament word for such a time is *kairos*. It means a time pregnant with possibilities. We may be at such a moment."[51] In terms of the challenges facing us and our use of information technology, this is precisely what I believe.

Notes

1. The older notion of "enthusiasm" is "possession by a god, supernatural inspiration, prophetic or poetic frenzy; an occasion or manifestation of these." The more modern notion is "rapturous intensity of feeling in favor of a person, principle, cause, etc.; passionate eagerness in any pursuit, proceeding from an intense conviction of the worthiness of the object." These definitions come from the online World Wide Web version of the *Oxford English Dictionary*, accessed through the University of Pittsburgh Digital Library.

2. This is a play on the "priesthood" notion of those who were literate in ancient societies, as written about by anthropologists like Jack Goody, and the tone of the modern writings advocating the power and use of information technology. For the Goody writings, see *The Interface Between the Written and the Oral* (Cambridge: Cambridge University Press, 1987) and *The Logic of Writing and the Organization of Society* (Cambridge: Cambridge University Press, 1986).

3. This is the theme of Mark Dery's *Escape Velocity: Cyberculture at the End of the Century* (New York: Grove Press, 1996).

4. The intense interest in the history of literacy, especially focused on matters such as writing and recordkeeping, demonstrate that all eras have been dependent on information. For some examples, see M. T. Clanchy, *From Memory to Written Record: England, 1066–1307* (Cambridge: Harvard University Press, 1979; rev. ed. Blackwell, 1991); Henri-Jean Martin, *The History and Power of Writing*, trans. Lydia G. Cochrane (Chicago: University of Chicago Press, 1994).; and Rosalind Thomas, *Literacy and Orality in Ancient Greece* (Cambridge: Cambridge University Press, 1992).

5. Michael Hobart and Zachary Schiffman, *Information Ages: Literacy, Numeracy, and the Computer Revolution* (Baltimore: Johns Hopkins University Press, 1998), p. 4.

6. Frederick P. Brooks, Jr. *The Mythical Man-Month: Essays on Software Engineering: Anniversary Edition.* (Reading, MA: Addison-Wesley Publishing Co., 1995), p. 280.

7. See Neil Postman, *Amusing Ourselves to Death: Public Discourse in the Age of Show Business* (New York: Penguin Books, 1986); *The End of Education: Redefining the Value of School* (New York: Alfred A. Knopf, 1995); and Postman and Steve Powers, *How To Watch TV News* (New York: Penguin Books, 1992).

8. See, for example, Stuart and Elizabeth Ewen, *Channels of Desire: Mass Images and the Shaping of American Consciousness* (New York: McGraw-Hill, 1982).

9. Thomas K. Landauer,*The Trouble with Computers: Usefulness, Usability, and Productivity* (Cambridge: MIT Press, 1995).

10. This is playing with the titles and premises of Gates's two books, the first with Nathan Myhrvold and Peter Rinearson, *The Road Ahead* (New York: Viking, 1995) and the second with Collins Hemingway, *Business@ The Speed of Thought: Using a Digital*

Nervous System (New York: Warner Books, 1999). A related reading should be the various court documents in the Microsoft Corporation antitrust case, which is cutting through the promises and hype and revealing practices of the high technology corporations.

11. Neil Postman, *Building a Bridge to the Eighteenth Century: How the Past Can Improve Our Future* (New York: Alfred A. Knopf, 1999), pp. 85–86.

12. Richard J. Cox, "Drawing Sea Serpents: The Publishing Wars on Personal Computing and the Information Age." *First Monday* (May 1998) at http://www.firstmonday.dk/issues/issue3_5/cox/index.html and "Do We Understand Information in the Information Age?" *Records & Information Management Report* 14 (March 1998): 1–12.

13. Douglas Coupland, *Microserfs* (New York: Regan Books, 1995).

14. See, for example, Stanley Aronowitz and William DiFazio, *The Jobless Future: Sci-Tech and the Dogma of Work* (Minneapolis: University of Minnesota Press, 1994).

15. U.S. Department of Education, *Getting America's Students Ready for the 21st Century*, June 1996.

16. Robert K. Logan, *The Fifth Language: Learning a Living in the Computer Age* (Toronto: Stoddart, 1995), p. 3.

17. Postman, *Building a Bridge to the Eighteenth Century*, p. 43.

18. See Diane Vaughan, *The Challenger Launch Decision: Risky Technology, Culture, and Deviance at NASA* (Chicago: University of Chicago Press, 1996).

19. Clifford Stoll, *Silicon Snake Oil: Second Thoughts on the Information Highway* (New York: Anchor Books, 1995). See chapter eleven for a full explanation of this.

20. Both the Germans and the Swiss were meticulous recordkeepers, but the recent controversy over the assets of Holocaust victims in Swiss banks reflects how such an emphasis on information and records can be used for grotesquely cruel human activities. See Tom Bower, *Nazi Gold: The Full Story of the Fifty-Year Swiss-Nazi Conspiracy to Steal Billions from Europe's Jews and Holocaust Survivors* (New York: Harper Collins Publishers, 1997); Itamar Levin, *The Last Deposit: Swiss Banks and Holocaust Victims' Accounts*, trans. Natasha Dornberg (Westport, CT: Praeger, 1999); Isabel Vincent, *Hitler's Silent Partners: Swiss Banks, Nazi Gold, and the Pursuit of Justice* (New York: William Morrow and Co., Inc., 1997); and Jean Ziegler, *The Swiss, the Gold, and the Dead*, trans. John Brownjohn (New York: Harcourt Brace and Co., 1998).

21. Jorge Reina Schement and Terry Curtis, *Tendencies and Tensions of the Information Age: The Production and Distribution of Information in the United States* (New Brunswick, NJ: Transaction Publishers, 1995), p. 3.

22. This is a theme in both of Michael Heim's books, *Electronic Language: A Philosophical Study of Word Processing* (New Haven: Yale University Press, 1987) and *The Metaphysics of Virtual Reality* (New York: Oxford University Press, 1993); the quotation is from page 10 of the latter book.

23. Anthony Smith, *Software for the Self: Culture and Technology* (New York: Oxford University Press, 1996), p. 71.

24. Douglas Rushkoff, *Cyberia: Life in the Trenches of Hyperspace* (New York: Harper San Francisco, 1994), p. 4.

25. Dery, *Escape Velocity*, pp. 64–65.

26. William J. Mitchell, *City of Bits: Space, Place, and the Infobahn* (Cambridge: MIT Press, 1995).

27. From many different perspectives, see Allen Emerson, and Cheryl Forbes, *The Invasion of the Computer Culture: What You Need to Know About the New World We Live In* (Downers Grove, IL: InterVarsity Press, 1989); Douglas Groothuis, *The Soul in Cyberspace* (Grand Rapids, MI: Baker Books, 1997); David F. Noble, *The Religion of Technol-*

ogy: The Divinity of Man and the Spirit of Invention (New York: Alfred A. Knopf, 1997); Michael Warren, *Seeing Through the Media: A Religious View of Communications and Cultural Analysis* (Harrisburg, PA: Trinity Press International, 1997); and Jeff Zaleski, *The Soul of Cyberspace: How New Technology is Changing Our Spiritual Lives* (New York: HarperEdge, 1997).

28. Erik Davis, *Techgnosis: Myth, Magic & Mysticism in the Age of Information* (New York: Three Rivers Press, 1998), pp. 80, 333.

29. Ray Kurzweil, *The Age of Spiritual Machines: When Computers Exceed Human Intelligence* (New York: Viking, 1999), pp. 128–129.

30. William H. Willimon and Thomas H. Naylor, *The Abandoned Generation: Rethinking Higher Education* (Grand Rapids, MI: William B. Eerdmans Publishing Co., 1995), p. 41.

31. Michael Pollan, *A Place of My Own: The Education of an Amateur Builder* (New York: Random House, 1997), p. 54.

32. Heim, *Electric Language*, p. 175.

33. I discussed this in my "Debating the Future of the Book," *American Libraries* 28 (February 1997): 52–55.

34. David Gelernter, *Drawing Life: Surviving the Unabomber* (New York: Free Press, 1997).

35. John Seabrook, *Deeper: Adventures on the Net* (New York: Simon and Schuster, 1998), p. 14.

36. George Gilder, *Life After Television: The Coming Transformation of Media and American Life* (New York: W. W. Norton and Co., 1994; rev. ed.), p. 56.

37. That it is possible, of course, to become a bit carried away can be seen in the continuing and relentless defenses by Sven Birkerts of the printed book: *The Gutenberg Elegies: The Fate of Reading in an Electronic Age* (Boston: Faber and Faber, 1994); *Readings* (Saint Paul, MN: Graywolf Press, 1999); and editor, *Tolstoy's Dictaphone: Technology and the Muse* (Saint Paul, MN: Graywolf Press, 1996).

38. See David G. Stork, *Hal's Legacy: 2001's Computer as Dream and Reality* (Cambridge: MIT Press, 1997).

39. Arnold Pacey, *The Culture of Technology* (Cambridge: MIT Press, 1983).

40. The poem, "The Rock," reads (quoted in Gilder, *Life After Television*, p. 79):

> Where is the Life we have lost in living?
> Where is the wisdom we have lost in knowledge?
> Where is the knowledge we have lost in information?

41. Robin Dunbar, *Grooming, Gossip, and the Evolution of Language* (London: Faber and Faber, 1996), p. 204.

42. David Damrosch, *We Scholars: Changing the Culture of the University* (Cambridge: Harvard University Press, 1995), p. 23.

43. Jorge Luis Borges, *Collected Fictions*, trans, Andrew Hurley (New York: Penguin Books, 1999), pp. 112–118.

44. Leon R. Kass, "What's Wrong With Babel?" in Gregory Wolfe, ed., *The New Religious Humanists: A Reader* (New York: Free Press, 1997), pp. 60–83 (quotations pp. 61, 72).

45. Steven J. Keillor, *This Rebellious House: American History and the Truth of Christianity* (Downers Grove, IL: InterVarsity Press, 1996), pp. 299, 300, and 301.

46. Mark Slouka, *War of the Worlds: Cyberspace and the High-Tech Assault on Reality* (New York: Basic Books, 1995), pp. 89–90, 144.

47. See, for example, Sherry Turkle, *Life on the Screen: Identity in the Age of the Internet* (New York: Simon and Schuster, 1995).

48. Kirkpatrick Sale, *Rebels Against the Future: The Luddites and Their War on the*

Industrial Revolution; Lessons for the Computer Age (Reading, MA: Addison-Wesley Publishing Co., 1995).

49. Donald A. Norman, *The Invisible Computer: Why Good Products Can Fail, the Personal Computer Is So Complex, and Information Appliances Are the Solution* (Cambridge: The MIT Press, 1998).

50. Jerry Mander, *In the Absence of the Sacred: The Failure of Technology and the Survival of the Indian Nations* (San Francisco: Sierra Club Books, 1991), p. 54.

51. Jim Wallis, *The Soul of Politics: Beyond 'Religious Right' and 'Secular Left'* (San Diego: Harcourt Brace and Co., 1995), p. 27.