

## Michigan COMMENTARY

### Telecommunications Technologies

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*Have computers made your life better?*

*Yes: 73% No: 15%*

From a telephone poll of 1,000 American adults, *Time* (March 8, 1993).

This *Commentary* reflects on telecommunications technologies: wires, gadgets, and gizmos that in equal measure terrify, stupefy, and serve people in their workplaces and homes. A key problem for you may be—as it is for many people—making telecommunications technology accommodate you rather than the other way around.

#### FIRST, SOME CATHARSIS

If you are perplexed by recent communications technologies, you are not alone. With a few exceptions, most corporate, political, association, and philanthropic leaders today are over 40 years old and were initially trained on what 15-year-olds today might call Stone Age tools—typewriters, carbon paper, and mimeograph machines, for instance. The doddering elite is squaring off against cybermedia, telematics, and virtual reality, and it is not a fair fight.

We could panic in insecurity. Introductory WordPerfect instructors threaten our documents with permanent oblivion should our little left finger accidentally strike the F1 key. Our kids, starting say from age seven, earn allowances for managing the household's VCR tapings. Our youngest employees subtly suggest readings to us to help us draw fully on their bounty of high-tech skills. Most phobias pale in comparison to our anxiety about CD-ROM (compact disk, read only memory). Technological change is shattering most particularly to baby boomers, who have never known another age group to be smarter and more gifted.

We could sit out the revolution. After all, leaders are people who, well, lead; they do not do the work. Let the workers adjust to LANs and remote signals. Leaders are concerned with the *what* and not the *how*. But what if a client, trustee, or constituent asks us a fairly simple question, say, *Do you work on a 386 or a 486?* We certainly cannot afford to look out of touch. We could fight by actively resisting technology; however, we know that is shortsighted and hopeless. Enough said. The good therapist always commiserates. End of commiseration.

#### WHAT DOES TECHNOLOGY HAVE TO DO WITH LEADERSHIP?

The essence of the telecommunications age is information and, more precisely, the communication of information. Alvin Toffler, George Gilder, the late Isaac Asimov, John Naisbitt, and other futurists believe that the new era ushers in, with the same intensity, upheaval similar to the economic, political, and sociological changes that occurred in the Agrarian and Industrial ages. If anywhere near the mark, such prognosis of heady change compels today's leaders to at least think about the effects of technology on their organizations.

Command of communication defines leadership. Neither Alexander the Great nor Julius Caesar could have conquered their worlds without couriers and outposts. Hitler would not have emboldened Germans to

conquer Europe without radio, and the German nation might still control the continent had there not been Churchill, a radio communicator of equal skill.

Contemporary wars are fought as much through communications technologies as armaments: our Vietnam, the Soviet Vietnam (Afghanistan), and the Persian Gulf War. Less violent wars are carried out exclusively through communications: General Motors versus NBC and Bill Clinton versus congressional conservatives. Competitive strategies in warfare, commerce, and politics begin with commanding contemporary communications, and they always have.

As history pronounces communications (from troglodyte grunts to live, televised bombing runs) to be central to leadership, one can only imagine how leadership will be affected when the global organizing force is not the hunting of fruits and nuts, military imperialism, agricultural production, or industrialization but rather communicating information. George Gilder credits in large part the fall of Communism and the breakup of the Soviet Union to the cheap price of computer switching—the gadgetry that enables anyone, anywhere, at any time to get the same information as the autocrat at the top and that destroys the web of control spun by authoritarians. Much of history will be rewritten through telecommunicationists' eyes. Even allowing for some exaggeration, we will be mightily impressed by the way the world's course is and always has been altered by communications skills.

### ATTACKING HIERARCHIES

Before Johannes Gutenberg invented the printing press, nearly all economic and political power was vested in a very few people. The printing press permitted information to be disseminated widely. By the eighteenth century pamphleteers could break news and rouse opinion sufficient to break monarchial yokes.

Contemporary communications likewise punish the autocrats, political or otherwise. The Old Guard coup against Gorbachev undoubtedly would have succeeded had not Russians watched on television the defiance of Boris Yeltsin. Rigidity and bloated, top-down decision making have nearly destroyed General Motors; its future, probably like that of the old Soviet Union, lies in breaking up its components (divisions as opposed to republics).

Most everyone has attended a workshop devoted to empowerment, decentralization, team building, or total quality management. The workshop leader tells us that the pathway to success is orchestrating, not dictating. One reason for the importance of orchestrating is that the diffusion of information via various technologies makes decentralization and cooperation among organization members necessary to modern work life and work leadership.

### FOR THE FUN OF IT?

Modern telecommunications technologies have grown largely out of two oddly similar pursuits: military preparedness and adolescent games. Probably the three greatest innovators of such technology are the United States Defense Department, Sega Genesis, and Nintendo. For very different reasons, these innovators needed complex and stimulating technologies that would meld sights and sound, video and audio, to produce games. Through such games, users could hone analytical skills, speed of decision making, and skills at rational optioning, maximizing opportunity, and minimizing loss. The war room of the Pentagon and the living room of the teenager stimulated the game players in similar ways (aiming and launching missiles and avoiding the nefarious Pac-Man).

Games are important for understanding and exploiting the full uses of technology, the most playful of workplace tools. A quick example is a game developed by my colleague Bill Sederburg—"How To Be a Successful Legislator." Like any game, it has rules and gives the player options along the way. In the end, one player has made decisions that optimize chances of reelection, building clout within the legislative chamber, and winning influence over policy. In demonstrations with legislators, the Sederburg game excites

participants, sharpens skills, and helps them immeasurably to think through the consequences of certain actions. Games simulate reality and create an environment in which the player (the Pentagon general, the teenager, or the politician) may act out life at no peril but with ever-sharpening skills.

You can debate until you are blue in the face the educational merits of viewing one hour of Masterpiece Theater or playing one hour of Tetris or Pac-Man. Reality holds that anything done interactively, pitting one against a machine or one against an opponent, is infinitely more stimulating than something you view passively. Technology is a hit because it is an interactive game, throwing at the user perplexing dilemmas (*do you want to replace this file?*) and challenging the user to figure out solutions.

## SO WHAT THREATENS YOU?

The following are a few telecommunications threats to and opportunities for your organization and how you might consider confronting them.

*Workers fear that technology will take away their jobs.*

It poses no real threat to most people. For a small number of employees, technology may lead to the need for reevaluating and refocussing career goals. For example, because technology eliminates the need for information to flow through numerous pipelines, layers of management that functioned primarily as conduits of information may be reduced. Some mid-level managers have seen technology erode their functions as information transmitters—those managers with skills beyond interpreting and channeling paper have gone on to more productive work, but many have lost their jobs to technology.

Nevertheless, although technology can assume or mimic certain human functions even as sophisticated as thinking (yes, *thinking*), it cannot motivate people or conceptualize or solve unrehearsed problems. Technology elevates labor, assuming mundane, repetitive tasks and allowing the human being to fulfill less mechanical responsibilities. When word processors entered offices, some secretaries were very nervous, just as when photocopying machines made carbon paper obsolete.

If anything, office technology has expanded the opportunities for expeditors, assistants, schedulers, consolidators, and organizers. Within the manufacturing sector, robots and other technologies have displaced workers and reduced work forces, but nowhere to the degree that insular, root-bound, and autocratic corporate leaders have. American manufacturing has declined not because of technological developments, but because its leaders ignored competitive threats, neglected customers, and did not make use of the higher person power that technologies were affording. The best means of allaying unnecessary fear is to invest nearly as much in employee training as in equipment acquisition. The value of technology assumes worker understanding and comfort with it: How about a general rule that puts one dollar into worker training for every two dollars invested in equipment and software?

*You do not know enough about telecommunications technologies and their effect on your organization to keep competitive or serve your customers better.*

The first thing to do is to appoint a *chief technology or information officer* (CTO or CIO.) We have CEOs, COOs, and CFOs, and there is room for one more acronym. Create a position at the top of your organization with responsibilities for inventorying the technologies in place, those used by competitors or like organizations, and those coming on-line soon. Make it the CIO's job to train and retrain workers. Allow the CIO to map a plan, within financial reason, for the integration of all your technologies and to obtain new ones that you should have. Tell the CIO to focus on communications with clients (what will clients need to acquire or use or be trained to use to get your product or service?)

*You don't have the faintest idea of what is meant by integrated technologies.*

The Home Shopping Network and QVC on cable television displays every conceivable good on the market. Television watchers call to order what they want. That is integrated technology (i.e., using a monitor,

cable television, telephone, and probably a computer at both the order receiving and the order processing ends). The key, immediate benefit of integrated technologies is personalization, customizing a product or service for an individual rather than a mass market.

Recently, I heard a presentation by Doug Ross, a former state senator and state commerce director who has been heading Michigan Future, a group of business, education, labor, and political leaders thinking about our state's future. Ross predicted that by the turn of the century, people will walk into a car dealership and use a high resolution monitor to design their ideal car (color, engine size, seats, the whole shooting match). The customer will watch as the personalized auto design is telecommunicated to the factory, where a team of engineers and workers will work up the order. The buyer will return home, and three days later the exclusively designed car will leave the factory en route to the customer. (Incidentally, Ross said that Nissan is now piloting the service.)

You cannot produce exclusively for a mass market and survive the twenty-first century. To tailor your product to fit the needs of the individual—whether your product is membership service, a public assistance program, philanthropically inspired social change, classroom teaching, or a car—you must use integrated technologies to identify the individual's need and customize your marketing and product to the needs of all your customers. Author Joseph Pine offers valuable advice on this topic in *Mass Customization: The New Frontier in Business Competition* (Boston: Harvard Business School Press, 1992).

*Aside from customization, do integrated technologies offer other benefits?*

Yes, particularly in organizing unwieldy swaths and depths of information. For example, CD-ROM built into your computer enables your desktop unit to play CDs, as you would at home or in your car. Beyond music, CDs are used widely now to store enormous quantities of information. All residential phone numbers in the United States fit on two CDs. For a national polling firm to draw a sample of 1,000 Americans, the firm would only need to select phone numbers randomly from two such CDs. You could put the state constitution and every public act, state supreme court decision, and attorney general opinion on one CD. A bill drafter, legislator, or lawyer seeking to analyze or amend a law could access the CD and get an immediate cross-reference of every opinion, court decision, or act that has anything to do with a given topic, say, railroads. You could narrow the search by defining the type of railroad issue (e.g., crossing gates in rural areas).

CDs are still a bit slow, but that is a small price to pay for their enormous power and reach. CDs, built into computers, provide not only a vast amount of information but also toss it back to you in multimedia ways. With CDs, a computer can provide video motion, stereophonic sound, full-color still photographs, data, and narrative, all integrated. For instance, my seven-year-old daughter plays with a CD entitled "San Diego Zoo." She can move through the zoo and (a) watch animals mate or be fed (video motion), (b) hear a narrator talk about the countries of origin of different creatures or hear the animals themselves (stereophonic sound), (c) zoom in on a close-up, color photo of a koala (photography), (d) find out the number of giraffes in the world (data), or (e) read about endangered species (written narrative).

*Since technology breeds customization, should you be concerned about the cohesiveness and loyalty of customers and employees?*

Absolutely! The crux of the problem for the contemporary manager leading the transition to integrated technology is to maintain order, loyalty, and cohesiveness, all of which are natural enemies of communications technology. Examine the declining public confidence in government. We have blamed it on Vietnam, Watergate, and other events, but from a communications point of view, this decline has been as much because of the moribund mass market approaches of governmental bodies that have isolated individual constituents from their elected representatives. The products of government (public roads and buildings, public services, and regulations) are still being designed and delivered by approaches that rely on generalization and stereotyping: one product for all. The U.S. consumer has enjoyed products that business has tailored to the individual, but government feels restrained from personalizing its benefits for fear of charges that private

gain is involved in such changes and that a loss of public interest will result. When a society hits the level of customization and immediacy of gratification that ours has in the private sector, government cannot meet these levels of expectation, and confidence in government erodes.

It is not a far reach to believe that governance in America will have to change dramatically, partly because technology has raised people's expectations of receiving customized, responsive service. Alvin Toffler told me some weeks ago that his next book would be on this topic. He believes that the very notion of elections may become unnecessary and counterproductive to the operation of representative democracy. To make a policy change, do we need to wait two or four years for an election if more accurate and timely readings of the public can be accomplished through polling and interactive plebiscites?

Many government employees have been used to thinking themselves immune from the need for change because they provide government "service." These employees need to realize, however, that they are expendable if the services they offer are of limited value. As with government, in all places of work the loyalties of customers and employees will break down. The cohesion of interests will break down. Telecommunications technologies will advance eighteenth-century liberalism like no revolution or political force before them. Leadership accustomed to organizational charts, hierarchical spans of control, and protection of privileged information will meet with ever-diminishing success. Leadership that organizes teams of people with diverse skills to solve a customer-driven problem will prosper.

*How seriously should we view the threat that voice mail, electronic mail, and other time-saving devices will erode human-to-human communication?*

This is no idle threat. We from the liberal arts shudder at the steady descent in human-to-human, live and spontaneous conversation and socialization. My spouse's answer to my anger about reaching her voice mail is "Hit the pound sign as soon as the recorded message starts. That way, you will escape having to hear the message and move right into leaving your message. Or you can just send me a FAX." And we are husband and wife! My problem is not saving a minute by hitting the pound sign; my problem is walking through, with my spouse, one of those mundane and perfectly human dilemmas (who is picking up our child?) that crop up, oh, 10 or 15 times a day. I do not want to leave on her voice mail an orderly memo that sets forth the problem, fleshes out several options, proposes a preferred course, and requests her analysis of findings and consent or opposition to the preferred course.

As with the ethical considerations that spring from medical advances (*should we artificially extend the life span?*), society will grope toward answers, balancing the efficiencies of technology and the very human needs and benefits of face-to-face, voice-to-voice discussion. Technological innovation must accommodate workplace camaraderie. Efficiency and speed must not run roughshod over our *personal* service and responsiveness to customers and colleagues.

Communications technologies will necessitate more meetings, more team building, and more personal time dedicated to leadership and problem solving. Eventually, technologies will advance, rather than interfere with, human-to-human contact. Video conferencing among remote sites is an example of technology supporting improved personal communications. In the awkward meantime, we will have to live with, but should not be controlled by, electronic and voice mail.

*Will telecommunications technologies foster more equal opportunities for people?*

Telecommunications technologies create competing push-pulls on people's lives, livelihoods, and outlooks, consequently both extending opportunities to the underprivileged (economically, geographically, and educationally) as well as threatening to widen dramatically the gulf between the haves and the have nots. Witness the former U.S.S.R.

Technologies, from the printing press to the automobile, have both created and diffused wealth. Telecommunications technologies are no different and in all probability will lead to abundant, new, and

(relatively speaking) high-paying jobs. By elevating the kind of human labor needed in the workplace, these technologies threaten to create lost generations of people incapable of moving to higher levels of work.

In education, technologies can be great equalizers, bringing Russian lessons into the classrooms of children in poor or sparsely populated school districts. All the knowledge of the world can flow into any given classroom. Education technologies, however, can also make obsolete certain features of the present classroom that have equalizing tendencies. The present system of grade levels, for example, tends to keep children of roughly the same age learning at approximately the same rate. New education technology, however, enables teachers to customize their work with students, allowing a greater range of educational development within a given group of students. Whereas technology can accommodate and nurture a 13-year-old's passion for and command of trigonometry, it can also help to develop a 16-year-old's gift for physics or a 7-year-old's interest in Shakespeare. This capacity for customizing education to an individual's abilities will inevitably press in the direction of an earlier and earlier identification of children's talents and acceleration of their development. Where, however, does that leave the child who falls behind this ever-accelerating pace? And, given the present rigid structure of education, what changes does this customization betoken?

As the information age matures and knowledge becomes an industry much as manufacturing has been, the peoples of the world face falling into either the knowledge class or cellar. In this possibility lies the reason for the pessimism of so many futurists about the consequences of technology on the Earth's people: Compounding the economic forces that could drive deeper wedges between the wealthy and the poor is telecommunications technologies' other offspring, tribalization.

One thinks of CNN and smiles at the prospect of one world accessing instantly all the knowledge of the globe, billions of people simultaneously and equally informed. The dark side of this, however—as evidenced in the breakdown of the Soviet Union, employee and customer loyalty, the mass media, and hierarchical control and cohesion—is that commonalities of interest and standards of behavior will shrink. It is human nature to confront change by retreating to the security of religion, ethnicity, nationality, and economic class of one's upbringing. Technologies, which cannot be bothered by human instincts to understand and reach social accords with others, drive us toward compartmentalization and imploding interests and security blankets, auguring as poorly for organizational stability as for world peace.

## CONCLUSION

Organization leaders are vexed by telecommunications technologies and the changes they bring. Leland Kaiser, an eminent health care educator, says that change is amoral. Like a highway, change does not awaken each morning intending to make your life more or less miserable. Like a highway, change is a corridor that leads to consequences, and it is these consequences that indeed make life more or less miserable.

The effects on human beings of telecommunications technologies are enormous and will become exponentially more significant in our homes, places of work, and communities. Leaders may not be able to control the advent of change; however, they can try to manage the consequences of it. On all this reflection, I think that no better statement could be made than that today's leaders in every field, many trained on the instruments of an old world, must focus their capacities for leading on creating more secure homes and organizations and a world where people control the technologies rather than the other way around.

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