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# BECOMING GOOD ANCESTORS

HOW WE BALANCE NATURE,  
COMMUNITY, AND TECHNOLOGY

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weather reporters there are real humans. Every now and then, I try the weather radio again, hoping that the synthetic announcers have disappeared, but they never have. One thought consoles me, however: I can still go outdoors to see and feel what the weather is like. At least the synthetic announcers don't follow me there. And as for Mr. Kelly, or whomever has succeeded you, I have a friendly warning: In the downsized, lonely, and unnatural world you've helped to synthesize, you may find that nobody gives a damn about you anymore.<sup>1</sup>

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### PSEUDOCOMMUNITIES

To begin with, a little anecdote. There is a classroom, an ugly, badly shaped, windowless room in a modern university building designed with students not in mind. In this room there is a small class, my class. We have rearranged tables and chairs in a semicircle around my place to defy the terrible ambience and to allow all twenty-five students to see and hear each other and me. Class is in session; I am talking. Two students sitting together in the front row—a thirty-year-old man with a pager on his belt and a twenty-year-old woman—are speaking to each other and laughing quietly; they see that I am looking at them, and they continue to laugh, not furtively or offensively but openly and engagingly, as if I weren't there. I don't know what they are laughing about. Both of these students will eventually receive an A in the course for their exceptionally fine work.

As I speak to the class, a part of my mind is thinking about these students and wondering why they are laughing. Is there chalk on my face? Is my fly open? Have I repeated myself or unconsciously misused a word or inverted a phrase? Then I remember something Bruce Wilshire wrote, and the paranoia fades. The laughter has nothing to do with me. Bruce, a philosopher who works in a nearby building on campus, described the same attitude in his own classes in his book, *The Moral Collapse of the University*. This passive and casual rudeness, a fairly new phenomenon, has a simple cause, he said. "I sometimes see students looking at me as if they thought I could not see them, as if I were just

somebody on their screen.”<sup>1</sup> When my students were laughing, it didn’t occur to them that I would be bothered—at that moment they were treating me as if I were a talking head on television.

That’s what it is; I am sure of it. The students (at least most of them) and I inhabit different worlds, even when we sit in the same room. In my world, the people I speak with are real; if I offend them they are hurt and angry *with me*, if I give them pleasure they smile *at me*, if I bore them they find an excuse to move away *from me*. We are alive to each other.

The world of my students is far more complex, a hybrid world, a world in transition. For them, some of the old world survives, but it is confusingly intermingled with the new, artificial world of electronic communication. Up to now, this has been mostly one-way communication; the recipients are physically and mentally passive. The faces on the television screen speak and speak—my students have been watching and listening in some cases for five hours a day or more, since the age of one, two, or three. I cannot compete with this. Three hours of class a week for fourteen weeks is no time at all compared with the television they have seen. Their authority figures are two-dimensional and these figures cannot hear. They neither take offense nor do they rebuke; their brief utterances are well suited to the wandering, superficial mentality fostered by the ever-flickering monitor.

The world of television, by inducing passivity and unresponsiveness, has cut many of the human threads and connections that once bound people together into working communities. Lewis Mumford compared life in front of the television screen to life in a space capsule, frightening in its absolute isolation.<sup>2</sup> Passivity and alienation are not communal virtues.

To the extent that television has weakened American communal life, it has weakened communal power, the only effective power to limit consumption, pollution, and the degradation of nature. This would appear to lock us into a hopeless spiral of decline, for television promotes these very evils while weakening the communal ability to resist them.

If this were all the threat that electronic communication has to offer, we might conceivably find ways to cope with the challenge, formidable as it is. We might, for example, take advantage of the fact that television, which has helped to ruin communities, has not eliminated the

desire of most people to be part of a community. A lonely consumer, however passive, is a dissatisfied consumer—unstable, even rebellious. Could we use this instability to fashion a revolt against television? Not any more. Not in the age of e-mail and the Internet.

Perhaps unconsciously, the developers of electronic communication have come up with the perfect counterstrategy to prevent us from using the loneliness of people caught in the television culture to wean them away from the tube and back into the community. This counterstrategy is the creation of *pseudocommunities*, my word for assemblages of electronically linked people. Pseudocommunities have arisen as substitutes for the real ones that are going or gone. Pseudocommunities are making everyone (or nearly everyone) feel good again, are replacing enervating passivity with a semblance of activity, creativity, and choice; but they are keeping the reality of true neighborly, communal responsibility and judgment far away.

Among the most familiar, albeit relatively primitive, systems of electronic, two-way communication, precursors of the pseudocommunity, are the recorded or electronically voice-simulated phone operators. Few people are left in the United States and Canada who have not had their blood pressure raised five or ten points by a patronizing recorded voice saying, "If you want to discuss your bill, press one now; if you want to speak to a nurse to schedule an appointment, press two now; if this is an emergency, press three now; if . . ." Making fun of this is like shooting a sitting duck; I leave it to those who earn a living as nightclub comedians or humor columnists. But a few words will not be amiss. These systems are a threat to communities, paving the way for pseudocommunities, in that they accustom us to dealing with facsimiles of people in our daily lives. Whether people or facsimiles do a better job is irrelevant—there is more to life than maximizing the efficiency of daily transactions (although electronic operators rarely do that—they waste vast amounts of time). Daily transactions between real people are one of the things that can make life worth living.

There is usually nothing that one can do about recorded and simulated voices except hang up, which is not always practical. The ruse of pretending that I don't have a touch-tone phone has been nullified by the demand that I speak the number of my response to the electronic voice decoder. Only in the case of the artificial information operator

at 411 is there any remaining possibility of satisfaction. When the bright, phony voice says, "What city please?" I answer "wuszcz wuszcz wuszcz" in a low monotone. This baffles the computer and a real operator picks up. How the phone company will deal with this in the future I don't know, but they will find a way. Perhaps a sublethal zap of electricity through the receiver's earpiece will modify my Luddite behavior.

Lately, when the wonders of the age of information and communication have got me down, I have revived my spirits by rereading three exceptional books, Jane Austen's *Emma* and Elizabeth Gaskell's *Wives and Daughters* and *North and South*.<sup>3</sup> These books take place almost entirely within a few miles of the houses of the central characters, and they describe the incredible subtlety and wealth of interactions, for good and evil, that one experiences in a real community. In the sort of communities described by Austen and Gaskell, the passions and activities of love, hatred, sexuality, compassion, selfishness, and intellectual intercourse, modulated by and expressed through the life of the community, take on a complexity and richness that cannot occur in an electronically facilitated pseudocommunity. In a later chapter, I will give Jane Austen some of the attention she deserves, but here I must get back to pseudocommunities.

It seems that almost every advance of our technology brings more social disintegration. Consider interactive video communication, which is already a part of distance learning and many telephones. To the voice in the receiver has been added the face on the screen, and this changes everything. The feature that kept the conventional, hardwired telephone from destroying communities is the *lack* of visual information that accompanied the voice. The disembodied voice was a constant reminder of what the telephone really brings about: communication between people who are actually, demonstrably, perhaps distressingly distant from one another. Like a letter, a phone call was received in private from someone who was elsewhere. Add a picture, and the privacy and sense of distance are disturbed, replaced by an illusion of proximity, a mockery of context. This is another step on the road to pseudocommunity.

But the danger to communities of interactive video is trivial compared with that of e-mail and the Internet. Here I fly in the face of conventional opinion; this technology is supposed to be a liberating force in society, and in some ways it is. Using electronic communications, one can send a message to any person in the world who is in the network, or direct it

to large groups of people simultaneously. It is much harder now for repressive governments or powerful interests to hide news that runs counter to their interests. What better way to promote the free democratic exchange of ideas, to create a "global community"? But there are several catches.

First, the centralized nodes through which all Internet messages pass will always make them vulnerable to censorship and tampering. And compared with old-fashioned spying, covert electronic manipulations are faster, cheaper, and pose little personal risk for the people carrying them out. The technology of privacy and security of communication is in a perpetual race with the technology of invasion and manipulation of the information transmitted. Like the arms race or the evolutionary battle between plants and the insects that eat them, there are no permanent winners and losers.

Far more significant is that the Internet fosters the sensation of being part of a community of people living in the same region and working, creating, and playing together for the common good. But the sensation is only that, for at the end of the day when you in Vermont and your electronic correspondents in western Texas, Delhi, and Yorkshire go to sleep, your climates will still be different, your time zones will still be different, your landscapes and soils will still be different, your local environmental problems will still be different, your cultures and histories will be different, and, what is most important, your neighbors will still be different; and while you have been creating the global community you will have been neglecting them.

The speed and simplicity of communicating electronically can be alluring and habit-forming. Unlike ordinary letter writing, anything that comes to mind can be conveyed instantly with little bother, and can receive an instantaneous response. Thousands and millions of streams of consciousness are accessible by cable or wireless. But this is not necessarily an advantage; it is often a problem. In a proper, durable relationship, many thoughts, after careful reflection, should be left unsaid. Careful reflection takes time and sometimes privacy, assets that we have stupidly wished away. Equally important, if we hope to make valid judgments about things and people, we must have information from all the senses, information that can never be conveyed fully by words, or even pictures on a monitor. The failure of many electronically formed

love affairs, once the couple finally meet face-to-face, is a case in point. There is no easy, glamorous way to be part of a community. The phrase “global community” is an oxymoron.

Pseudocommunities detract from the real work of community building, which, although deeply gratifying, requires painstaking, persistent efforts and perpetual learning that continue as long as one keeps on breathing.

Communication is good and necessary, but not at the expense of communal integrity, which requires a balancing measure of separation of one community from another, and, at times, of one individual from another. Electronic communications systems lack this balance, this subtle regulation of communal function. In the pseudocommunity of e-mail and the Internet it is becoming harder and harder to maintain the kind of personal boundaries that add strength and diversity to real communities and keep them, in most cases, from flying apart.

Constantly there are new products and systems of electronic communications coming on the market. Reality is being replaced with virtual reality. Where will this end? For it will end in the not-too-far-off future. It will end because the global pseudocommunity is and will increasingly become economically unstable. As energy and material resources rapidly grow scarcer and more expensive, the Internet, which is very resource-consumptive, may not be as readily available as it is now. Moreover, for the great majority of users, electronic communications do not help to create real, durable wealth or benefits. The human and natural resources devoted to these electronic systems are not resulting in a socially acceptable outpouring of *necessary* material goods and services. Instead, production, local economic stability, and communal security are sacrificed to transient efficiencies, destabilizing luxuries, and the quick profits of distant entrepreneurs.

Although they do not create much real wealth, the new communications enable wealth to be shifted rapidly from place to place. Under these circumstances of global free trade, instantaneous global finance, instantaneous global exchange or theft of wealth-producing ideas, and facilitated global exploitation of distant resources, it is becoming difficult for most real communities—and people—to continue the slow accumulation or even maintenance of assets that is a condition of survival. As our real communities and nations become more impoverished,

the accumulated wealth and social order that have supported the information research, the electronic hardware and software, and the enormous energy consumption of the Internet<sup>4</sup> will be beyond our means to provide. At this point, the whole network is likely to fragment and contract.

The new systems of communication will also be rejected for social reasons. In addition to being exploitative and expensive, consumers rather than generators of wealth, pseudocommunities are thin, transient, and above all unsatisfying.<sup>5</sup> Although it is fun to play electronic games simultaneously with hundreds of partners in several dozen countries, this kind of fun does not sustain any but the shallowest of existences. Moreover, the loss of real human contact, combined with the breakdown of defined boundaries of self and community, will not be tolerated by most of us forever. Already, research is indicating that those who spend the most time on the Internet and in e-communication are among the loneliest people in our society.<sup>6</sup> Pseudocommunities are seductive, but at some point, most of us will rediscover that face-to-face friends and coworkers are superior to virtual ones.

In an article in the *New York Times* about campus e-mail, reporter Trip Gabriel wrote that on many campuses, electronic communication is preventing the development of meaningful, communal relationships.

Dormitory lounges are being carved up for clusters of computers, student unions are declining as gathering places, and computer-wired dorm rooms are becoming, in some cases, high-tech caves. . . . James Banning, an environmental psychologist at Colorado State University who surveyed some 100 university housing officers last year, remarked: "Universities are saying: 'Oh, my God, they're in their rooms. How can we ever build a sense of community . . . if they don't come out?'"<sup>7</sup>

In one extreme case, a student described by Gabriel communicated with his roommates by e-mail even though they were sitting a few feet apart in the same room. But another student, who had become dissatisfied with electronic socializing, said, "It's easier to just meet someone. You learn how much of a difference it makes to see someone in person and actually talk to them."

Electronic forms of communications are still relatively new and exciting. Indeed, for some who are infirm and handicapped, electronic communication can provide a life-saving source of human contact; and for anyone the Internet, if used judiciously, is a wonderful and quick source of information. We should not, however, confound the value of the Internet for providing information with its value as a substitute for community.

I remember a photograph of a baby monkey in a psychological experiment: it was being raised in isolation with a surrogate "mother" made of wire covered with terry cloth.<sup>3</sup> The monkey was clinging to the device, but it looked profoundly sad and anxious. For most of us, in the end, as the dust gathers and the glamor fades, our pseudocommunities of silicon and plastic and liquid crystal will prove no more comforting and no more nurturing than a surrogate mother of wire and terry cloth.

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## OBSOLESCENCE

At the end of the Cretaceous period, the last dinosaurs disappeared from the earth, setting off an evolutionary jubilee among the Milquetoast-like mammals that survived them, and preparing the ground for what was to become, sixty-five million years later, a permanent source of gainful occupation for scientists whose job it is to wonder why the dinosaurs died out. Scores of reasons have been given for this remarkable concatenation of extinctions. Global climate and sea level were changed by a city-sized asteroid striking the earth near what is now the Yucatán, or by a massive set of volcanic eruptions, or by the solar system passing through the core of a giant molecular cloud, perhaps colliding with a supercomet loosened from the Oort cluster, which orbits the Sun beyond Pluto. Theories of catastrophic extinction abound. Some of the most daring even conjure up the specter of an unseen companion star to our Sun, named Nemesis, whose eccentric orbit brings a wave of potentially deadly comet showers--and extinctions--every twenty-six million years. But there are also paleontologists who argue that the dinosaurs went away gradually, not suddenly, over a period of

millions of years, and that toward the end they coexisted with the earliest hoofed mammals, including ancestors of horses, cows, and sheep. If extinction was gradual, a different line of thought opens up: perhaps the dinosaurs died out because they couldn't adapt and compete in a changing world. The big lummoxes were obsolete.<sup>1</sup>

I first heard about the dinosaurs' obsolescence back in my student days. It was as satisfying a notion then as it is today, especially if you didn't think about it too hard. Here were these lumbering, pea-brained reptiles, barely able to walk and chew gum at the same time, while all around and underneath them, cleverly hiding behind clumps of primitive vegetation and cleverly burrowing in tunnels in the ground, were the nerdy but smart little mammals about to emerge from the shadows and begin their ascent to glory - somewhat, it occurs to me now, like Bill Gates in the waning days of American heavy manufacturing.

Unfortunately, if one clutters up this elegant picture with a few more facts, the outlines begin to get blurry. Some of the dinosaurs were small and presumably agile, possibly warm-blooded, and maybe even feathered. They had much better eyes than the mammals had then or have today, if we can judge by the dinosaurs' surviving relatives, the modern reptiles and the birds. (This is not to say that the mammals didn't *start* with good eyes, inherited from their own lines of reptilian ancestors. But they lost them during endless eons of subterranean and nocturnal skulking, and when they came out into the sunshine again they re-evolved, almost from scratch, a jerry-built substitute.) As for cleverness, if brain size is a key to evolutionary survival, what happened to the Neanderthals, whose brains were bigger than ours? Why did they become extinct? Finally, although it seems almost churlish to point it out, consider the alligators and the crocodiles. We could call them obsolete: they are big, they have small brains, they are slow and ungainly on land, and they are distant relatives of dinosaurs. They are also still around. And with a little protection from overhunting, they can do surprisingly well in our unforgiving world.

Actually, I haven't the faintest idea why there are no more dinosaurs, and if you are reading this to find out, you can stop now. The questions that interest me more are, where did the idea of obsolescence come from, and why has it become so popular? Does its insistent presence in our lives help or hurt us? Is it possible that our constant fear of

becoming obsolete is leading us along the very road that the dinosaurs traveled?

Some sense of obsolescence is, I suppose, an inevitable by-product of developing technologies. Foot soldiers in biblical times learned the hard way about obsolescence when they first did battle against men in iron chariots. George Sturt, working in his wheelwright's shop in Victorian England, knew all about obsolescence, the "immensity of changes" in machine technology that instantly "separated employers from employed . . . robb[ing] the latter of the sustaining delights which material used to afford to them."<sup>2</sup> But seldom if ever in history has obsolescence become such a leitmotiv in our lives as it has in this electronic age. Anything that is gone, even the dinosaurs, is now described as obsolete.

The social and economic costs of obsolescence are incalculable: perhaps the most important is our frightening loss of access to older information, as fragile digital storage media deteriorate and, more important, as changes in software and hardware render older documents inaccessible. As Jeff Rothenberg, senior computer scientist at the Rand Corporation, pointed out: "Shakespeare's first printed edition of [his sonnets] exemplifies the longevity of the printed page: the words are legible after almost four centuries. . . . But digital media can become unreadable within a decade." As Rothenberg notes:

Information technology continually creates new schemes, which often abandon their predecessors instead of subsuming them. . . . [In the future], if we need to view a complex document as its author viewed it, we have little choice but to run the software that generated it. What chance will my grandchildren have of finding that software 50 years from now? . . . Storing a copy of the operating system on the CD may help, but the computer hardware required to run it will have long since become obsolete. . . . It is only slightly facetious to say that digital information lasts forever—or five years, whichever comes first.<sup>3</sup>

Standardized relational database systems can be devised, but Rothenberg shows that they have serious flaws that can render translation difficult or impossible. The comparatively short functional lifespan of digital storage media introduces another complication. And even if

all of these problems could somehow be overcome, what chance is there that they would be implemented by the software and computer hardware industry? For declared obsolescence accompanied by constant change, whether needed or not, is a proven way to keep one's product ahead of similar competitors.

Obsolescence today implies much more than the simple recognition of what is new. It demands the absolute rejection of the old, as if the new were only validated and confirmed by the denigration of everything that came before it. To call some object, process, idea, or person obsolete is to render it beneath contempt, incapable of improvement. What force can have shaped such a destructive attitude, which at a single stroke cuts us off from our past and devalues our soon-to-become-obsolete present? One force powerful enough comes to mind: the drive of corporations to maintain and increase profits, a drive empowered by advertising. As General Motors' Alfred Sloan and his successors in many industries have long known, obsolescence sells products. The fear of becoming obsolete is being carefully taught at this moment to countless consumers around the world, drummed home by all the energy of the media and reinforced by every branch of our education industry, from kindergarten to graduate school. This is a catch-22 situation, because there is nothing wrong with profit-making companies trying to make more profits—in fact, we expect them to. And there is nothing illegal or even indecent about declaring one's older products obsolete while trotting out the new ones. Yet the end result of this process is destructive to everyone. "Let them eat the future," Wendell Berry once wrote.<sup>4</sup> How many of us are left, I wonder, who share with Berry the precious knowledge that the future is inedible?

Selling the creed of obsolescence is hard work because obsolescence is an unnatural concept, especially when applied on a time scale of only months, years, or even centuries. By unnatural, I mean that it does not really describe what happens in nature. Consider the American chestnuts, just one hundred years ago the dominant tree of the northeastern hardwood forests, which are now teetering on the edge of extinction. They were brought low in a decade by an introduced fungal parasite—did that make them obsolete? Extinction is often the result of a rare and highly specific event in the life of a species; the passing of that species is not a general indictment of its quality. The idea of obsolescence, as

currently employed, is too vague and value-laden to be of use in biology, and it certainly doesn't apply to a diverse group of animals such as the dinosaurs.

Would we have been so quick to describe the dinosaurs of the late Cretaceous era as outdated if we did not live in such an obsolescence-conscious age? The dinosaurs no longer exist, hence the dinosaurs were obsolete; they were losers. What a strange thought, considering that more than 99 percent of all the species that have ever lived are now extinct. It makes about as much sense as saying that baroque music is obsolete, somehow inferior to the classical style that evolved from it, which itself became obsolete at the dawn of the romantic period.

Does it do any harm to apply the unnatural idea of obsolescence to nature? Probably. I am not worried about the dinosaurs. They are gone. But what about the frogs, the rhinoceroses, and the less conspicuous species of endangered nature? How tempting to write them off as obsolete (especially rhinos)—losers unable to go with the flow. Not only does this attitude undermine the conservation of vanishing species, but it distorts our perception of our own place in nature. We pretend that we are no longer part of the grand scheme but are sitting on the sidelines judging the participants. It is a fine show for a little while, yet in reality we have been given neither permission nor power to remove ourselves from the parade. We will be judged along with the rest, by criteria that are certain to be more complex than anything we can understand or predict, and nothing like our simplistic notions of winning, losing, and becoming obsolete.

Think about *Limulus*, the horseshoe crab, that curious marine invertebrate whose over-fished remnants are even now, as I write, clambering awkwardly out of the sea along the Jersey beaches, taking advantage of the spring tides to leave their eggs in the sand in the darkness of a new moon. If we knew them only as fossils in the Burgess Shale, we might say, "What preposterous creatures. How inefficiently they must have moved, with those ponderous shells and thin legs, dragging that grotesque spike. They were born obsolete, an evolutionary dead end. No wonder they are gone."<sup>5</sup> But the horseshoe crab is still here, looking much as it did fifty and one hundred million years ago, still bearing a strong family resemblance to its eurypterid ancestors who have not swum the seas these four hundred million years.

Horseshoe crabs and alligators teach us that the word *obsolete* comes much too easily to our tongues. Even within the limited context of our own technology, we should be careful where we paste that label. Did it work? Did it last or create the conditions for its own regeneration? Was it beautiful? Did it give pleasure? Was it a critical link in a larger process? Did it *need* to be replaced? Is its replacement an improvement? Is it possible that it will be needed for our survival in the days ahead? Slap! On goes the label—*obsolete*—and none of these questions matter, none are asked. To call something obsolete boasts an omniscience we do not possess, a reckless disregard for the deep currents of history and biology, and a supremely dangerous refusal to look at the lasting scars our technology is gashing across our planet and our souls.

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#### ACCELERATING SOCIAL EVOLUTION

The threat or promise of change brings out the frail nature of mankind's psyche. And sudden change is an imposition of instability. The rational argument, from its modern beginnings, has tried to avoid dealing with this reality. The multitude of abstract social models—mathematical, scientific, mechanical, and market based—are all based on an optimistic assumption that a schematic reorganization of society will be good for the human race. . . . [H]uman beings do not respond effectively to this sort of manipulation.

John Ralston Saul, *Voltaire's Bastards*<sup>1</sup>

There is a battle of evolution going on that is quite separate from the one that makes the newspaper headlines. It is an invisible, unpublicized struggle, and its outcome may affect our lives and civilization more directly than the original evolution controversy ever did. The new

protagonists are not science and traditional religion; instead, they are the apostles of the religion of progress versus those surviving groups and individuals committed to slow social evolution as a way of life.

To understand this other struggle, it is necessary to look at evolution in a broad context that transcends biology. Not just a way of explaining how the camel got her hump or how the elephant got his trunk, the idea of evolution can also be applied to the writing of a play that “evolves” in the mind of the playwright or the “evolution” of treaties, banking systems, and anything else that changes over time in a nonrandom direction. More to the point, it applies—in nonbiological ways that Darwin inspired but probably never dreamed of—to the evolution of relationships among people in organizations or communities, one of the most important evolutionary forces affecting our lives, and the most poorly understood.

In the past, the concept of evolution has often been misapplied for political purposes. Social Darwinism—roughly explained as the belief that the rich and powerful deserve their success because they are more fit than the poor and weak—is the most glaring, dangerous, and scientifically foolish example. Nevertheless, there is a legitimate application of evolution to social processes: namely the evolution of institutional and communal relationships, which is clearly analogous to biological evolution. Formerly, in a business, university, or community that remained undisturbed for a number of years, new connections and relationships among organized groups and individuals formed slowly, the accumulated result of countless small decisions and chance events, similar to the mutations and genetic recombination at the heart of much biological change. If one of the connections or relationships was grossly dysfunctional, it was usually eliminated by fiat or by common consent, in the same way that natural selection acts on an individual organism. And like biological evolution, which has resulted in a great many false starts, stagnant lines, and extinctions, the evolutionary pace and direction of evolving institutions and communities have often been inadequate to keep them from extinction, too. Evolution—biological and social—is not a kindly process, but overall it works; some species, some institutions, some communities always manage to survive and prosper if evolution is allowed to run its course. Without social evolution, it seems likely that no human systems could work at all.

In our time, strong and ruthless antievolutionary forces are at play. Social evolution is not being permitted to run its normal course. These forces, however different they may be, have a common effect: frequent, sudden disruption of established relationships, customs, and behaviors among people who work and live together. Cataclysmic changes—from ice ages to the impacts of giant meteorites—have disrupted biological evolution in former ages of the earth, wiping out vast numbers of species in mass extinctions. Now, human activities on a global scale are causing another mass extinction of species, and, in a terrible extinction of a different sort, the evolving social order of our relationships, institutions, and communities is being disrupted by the powerful, inhuman forces of modern technology and economics. Changes occur too rapidly, too extensively, and too often to permit social evolution to work properly; increasingly it breaks down altogether. The ability of our social institutions to develop the enduring human cooperation necessary for survival is being threatened. Evolution requires a critical blend of change and stability: change to provide new possibilities for coping with an ever-altered environment, stability to ensure that successful adaptations, whether new or old, are not immediately swept away and discarded in a continuous, blind, senseless upheaval.

Incessant reorganization is the most violent of the anti-evolutionary forces now loosed upon the industrial world and much of the Third World as well. Once an infrequent event, a last resort to be called upon for a system that had patently failed, reorganization has become both a routine management tool and an incidental consequence of the mergers and takeovers that dominate today's business. As Scott Adams, cartoonist of the anti-evolutionary chaos and author of *The Dilbert Principle*, has written, "People hate change, and with good reason. Change makes us stupider, relatively speaking. Change adds new information to the universe; information that we don't know. . . . On the other hand, change is good for the people who are causing the change. They understand the new information."<sup>2</sup> Necessary change is one thing; change as a way of controlling others is something quite different.

Reorganization is a mighty weapon in the hands of an insecure manager (a surprising number of managers seem insecure). It breaks up comfortable working relationships that might, if left undisturbed, allow employees the time and peace of mind to question and evaluate the

managers' decisions. When reorganization strikes, hardly anyone is secure; personal connections are severed; paranoia increases; innovation and creativity decline. It may take months or years for the chaos to subside, perhaps just in time for the next reorganization. Frequent reorganization slows productive work and reduces its quality, both of which depend on stable, evolved relationships. Imagine, for instance, a jazz band or string quartet that has played together for years, each player attuned to the slightest nuances in tempo and dynamics of the others; then, suddenly, the members of the group are forced to switch instruments at unpredictable intervals and change places with other musicians waiting offstage. What would the music sound like under these conditions?

An unusually severe bout of reorganization hit my university a few years ago. A university committee empowered by the office of the provost and led by a distinguished professor in the social sciences terrorized the five campuses in New Brunswick for months, gathering "information" and threatening major reorganization. Eventually a report was delivered to the provost. We waited anxiously, not knowing what it said, devising strategies of response to the scenarios we imagined. It was like living under the wavering ax of a drunken executioner. Then the blow fell. Without warning, the provost's office itself was abolished by the president. The reorganizers were reorganized. Naturally, the committee's report vanished without a trace, and all of our strategies were totally inadequate to meet the new disruptions. A few weeks later, I called one of the administrators who had survived in the wreckage of the former provost's office. "I'm keeping a low profile," he confided quietly, "so that I don't get my head chopped off. Those of us left here move cautiously because we don't want to slip in the pools of blood on the floor." Since this reorganization, there have been several more reorganizations, each of them backed by specious rationalizations, and each causing totally unnecessary damage, while the remaining people who actually do the work struggle on as best they can. In the latest reorganization, for example, the names of two of our colleges were eliminated while their administrative structures were changed, causing disorganization and problems for students, and infuriating loyal alumnae of both institutions for no legitimate purpose that could not have been achieved in a less disruptive way.

The rapidity of the electronic transactions that have replaced older ways of doing business is another force that opposes evolution. Social evolution is slow, not as slow as biological evolution, but a lot slower than the frenetic, sound-bitten, microsecond-conscious blur that we exist in now. It takes a long time to get to know people, to work with them effectively and smoothly—a long time to learn what they can and can't do, will or won't do, what turns them on and what turns them off, when they can be trusted and when they can't be trusted, when to smile and when to frown. In an electronic world, there is little time for social evolution, which remains stubbornly resistant to any efforts to make it move faster.

One of the first electronic disruptors of social interactions was the fax. Ordinary letters are slower than faxes. There are times, especially in the case of routine communications that face a deadline, when a fax seems the only way to get the job done. But the speed of a fax has serious drawbacks; when I send a fax, I need to ask myself whether I can afford to work so quickly. Having the time for reflection is not a luxury and is not dispensable. A decision that seemed unambiguous when it was made may appear quite different after a night's sleep. In such cases, a rapid exchange of faxes will help to promote bad choices and the social disruption that follows.

Far more intrusive than the fax, however, are the digital systems that now pervade the workplace and manage our relationships with our friends and colleagues. Although billed as efficient conveniences, they are often anything but. There is no time to make things work smoothly, even if they once did. We are too busy learning how the new system works and how to get the information to and from the fellow in the next office. The hype and euphoria that surrounds technological change helps to mask the social and economic disruption that these electronic systems facilitate. Computer expert Paul De Palma states:

Many studies, including some done by the National Research Council and by Morgan Stanley . . . fail to indicate any correlation between productivity growth and information technology expenditures. Distressingly, the opposite appears to be true. As Thomas Landauer has pointed out in *The Trouble with Computers*, those industries that invested most heavily in information technology,

with the exception of communications, seem to have the most sluggish productivity growth rates. Though one still could argue that schools and colleges should continue to teach courses in microcomputer literacy . . . our time might be more profitably spent breaking the bad news to the public that pays the bills. In the process, we might also come to understand how a machine so patently clever as the microcomputer could have done the business world (outside of the computer industry itself) so little good.<sup>3</sup>

Just as technology-fostered speed (including the speed of introduction of new technologies) disrupts social evolution—the development of stable institutions and relationships—so does technology-fostered isolation. I have already discussed the isolating effect of e-mail and the Internet; the impact of this isolation on the fabric of institutions and communities can be devastating. It is hard to imagine how the process of social evolution can function when connections among people are limited to the narrowest of information channels and the workplace is fractured into a collection of individually staffed home workstations and far-flung employees communicating with each other by e-mail, text messaging, cell phones, and occasional video conferences. While this kind of atomized and shifting arrangement is most likely to be found in the service sector of business and in universities, manufacturing is also prone to technology-related upheavals. Factories are now far more portable or disposable than they once were. Increasingly, when their plant moves to a different state or country, workers have to choose between losing their jobs or abandoning their homes, friends, bowling clubs, music groups, favorite hiking trails, trustworthy auto mechanics, neighborhood shops, and children's schools to follow their workplace to its new location (if they have been offered that option).

Social evolution, like its biological counterpart, is a process of great depth and subtlety. Its best end products—lasting institutions, durable friendships, stable communities, accumulated wisdom, and gentle and productive cooperation—are among the highest achievements of our human existence. They help us live in a mutually beneficial way with the other products of biological evolution, which we collectively call nature, and they can shield us from nature's occasional violence and from the violence that wells up in every human society.

But the Second War of Evolution is upon us. Incessant disruption, superficial contacts, and personal isolation are making social evolution impossible. We are like brightly colored bits of glass inside a giant kaleidoscope. Oh, look at the beautiful pattern we make. Twist, it changes. Oh, look at this one. It's not so nice. Twist, it changes again. Twist. Twist. Don't look anymore, just hang on.

Better yet, let's get out of the kaleidoscope. Find others and slowly make our own patterns with them. Reaffirm quality over the false and deceptive claims of efficiency. As Erwin Chargaff, great biochemist and a father of molecular biology, once remarked: "There is no hurry; there never is any hurry."<sup>4</sup>

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## WRITING

The semester was over, my grade rosters had been handed to the registrar, and I was home, writing sporadically and glancing through a book by P. G. Wodehouse, whose incomparable prose, as elegant as it is funny, is always very soothing.<sup>1</sup>

The thirty students in Conservation Ecology were very good that year--the year my frustration with their writing reached the boiling point. Most of them were informed, outdoors-loving, committed, hard-working people who cared for each other and seemed to enjoy the class. With a few exceptions, however, they couldn't write English, and I was still recovering from the effects of reading the term papers upon which their grades were largely based.

For years, I had been assigning a major term paper in lieu ("in loo," as one student wrote) of an exam. I used to get eighteen- to forty-page papers, acceptably or even nicely written; but by the mid-90s--and getting worse every year since--the students were struggling to reach fourteen pages with the help of triple spacing, margins you could drive a bus along, and type sizes usually reserved for the visually disabled. And the writing!

The first mistake the students are now making is to use the spell-checkers of their computer software as a substitute for proofreading. The

results are papers in which all the words are spelled correctly, even if they are not the right words. Reading these spell-checked papers can be like trying to translate from Spanish to English based on the assumption that words that are spelled the same in the two languages have the same meaning. (This can lead to some confusion if, for example, the Spanish words are *sin*, *cabal*, or *saber*.) In one of the papers, I had to erase a long, marginal comment I had written when I realized that *illicit* was meant to be *elicit*. In another, I had trouble with the philosophical implications of the word *modal*, used throughout the text, until I turned it into *model*, which made more sense.

Then there were words such as *begum* (“a Muslim lady of high rank,” my dictionary told me), which didn’t seem to fit easily into the context of a paper on the genetics of coyotes, and which didn’t have an obvious substitute. When I came across words like this, I just left them: it was easier to imagine Muslim ladies of high rank dealing with coyote genetics than it was to find the intended word beginning with “b” or, alternatively, ending with “m.”

Complicating the difficulties brought on by the spell-checkers is a new system of placing commas, apostrophes, and other punctuation marks, a system whose secret logic has not been divulged to me. It may be a flaw in my training, but I find it difficult and terribly time-consuming to read a paper in, which, the comma’s have, been placed in a seemingly, random, manner, and apostrophe’s are used to make word’s plural. If a student then further complicates the writing by the sentence structure and scrambling, and not only is it inverted and, because, of all of the, parenthetical phrase’s, and especially using, noun’s as adjective’s like desert fish habitat loss (DFHL) with so many acronym’s, maybe, five or, ten, to learn and forget for each, paper and with an organization based on the idea that if you, repeat, a sentence enough with a few small change’s, each, time then you have organized your thought’s so you see the affect I mean effect it has on me and why after reading the paper’s I wanted to kick the dog except because of his teeth which are very, large. The paragraphing:

too.<sup>2</sup>

When I finished grading the last paper on that day when my frustration with the students’ writing came to a head, the dog was asleep on my foot. Getting up quietly and carefully, I went outside to plant potatoes in

the back garden with my son Sam. I made the furrow; Sam placed the potatoes at nine-inch intervals and covered them up with soil. His older brother Jon was disdainfully shooting baskets in front of the house, not interested in what we were doing, but Sam's adolescence took a different turn; it didn't seem to keep him from enjoying potato planting with his father—yet. By the time we finished, I was calm enough to go into the house and tell my wife about the papers.

Joan listened to my lament, echoed it with some acerbic comments about the term papers she was grading for her course on global ecosystems, and said, "You realize what's happening, don't you? They're writing the way they talk. They don't know the difference between written and spoken language—that's part of the problem."

"Why don't they know the difference?"

"Because they don't get practice writing anymore, except things like text messages. To make matters worse, they don't read either, so they don't get to see how other people write. That's why they don't know the difference between 'affect' and 'effect'; they sound the same when they're talking, which is all they know how to do."<sup>3</sup>

"That's true," I answered. "Most of my students are seniors, and they tell me this is the first term paper they have written. They've never written anything longer than three or four pages."

The next day, I was still thinking about it. What, I wondered, are they doing in elementary or high school while they are not writing? Well, the answer to that is pretty simple; they are being tested, or, more likely, being prepared for being tested. To survive in the modern world of American education, it is absolutely necessary to be able to do well on standardized tests. And no matter what the makers of these tests say, the best way to do well is to prepare early (third grade, for example) to learn the different forms of standardized questions, to memorize (but never use in daily life) standardized lists of words and definitions, and to work through many sample, standardized problems. Testing is, I believe, a necessary part of education, but when it *becomes* education, when it displaces the teaching of what it is supposed to test, something is seriously wrong. How, I mused, have the educational testers, thousands of educational psychologists, statisticians, computer scientists, and school administrators, managed to pull off this massive swindle? How have these "professionals" convinced us that so much testing is necessary and

that these tests don't themselves interfere with and misdirect the process of education? Part of the answer must be our infatuation with anything that smacks of science and statistics. But there is more to it; the testing industry has done a wonderful job of hiding the assumptions that underlie its tests, some of the most dubious assumptions one can find in a democratic society.

The first assumption of standardized testing is that for any question there is nearly always a clear and evident right answer amidst a sea of wrong answers.

The second assumption is that complex ideas and subtle nuances of meaning can be reduced to brief questions with short answers that can be graded by a computer. Even written essays on these tests can be evaluated objectively and satisfactorily by poorly paid graders who do not know the writers, and whose work output is itself being timed by the management of the testing company.

The third assumption, one of the most dangerous, is that a test score will reveal the testee's present worth, promise as a future student, and his or her level of success in life itself, years later, after formal education is done.

There is a final assumption, the master assumption behind all the others. It is that written language can be abstracted from daily life without doing it any damage. What I mean is that the testers, professionals to the core, have helped to take written language away from my students, who are mere amateurs; they have separated it from life and have made it a disembodied part of what we mistakenly call the educational process. Considering the testing assumptions that the students have grown up with—that there are always evident right answers, that complexity reduces to simplicity, that objective tests describe the present and predict the future—no wonder they have trouble writing (and thinking) about the problems of the real world.

Writing gains strength from frequent practice, but only when inspired by the events of daily living.<sup>4</sup> For instance, in a short story, I came across a description of someone as "weedy" in appearance. Looking this up in my dictionary, I find that it means "tall and thin; lanky and weak-looking; of poor physique." But as a gardener who knows weeds from experience, I can give the definition added meaning. True, weeds are often tall, thin, and unattractive; they are also fast-growing, persistent,

and, for all of their poor physique, surprisingly tough. The people who first used “weedy” as an adjective must have known these things—they were putting part of their lives into the word, thus making their language a bridge between nature and mind.

The writing of most of my students’ term papers shows that the bridge is out; the reality of their language is a static and contrived virtual reality, consisting of disembodied images without true life, without sustaining passion. In no way does it reflect the world of their active, outdoor being. Even the punctuation and paragraphing are dead and disconnected. A comma should be nothing more than a place to take a quick breath without losing a train of thought; a dash is a deeper breath; a paragraph is a pause that allows you to look around at the landscape and see where you have been and where you are going. The apostrophe, most abused of all punctuation marks in the virtual world of my students, has two functions—one as an indication of something missing in a contraction, and second as an indicator of possession. But these vital functions are obscure to many students: the apostrophe is now only an archaic mark vaguely associated with the letter *s*. One tree, two tree’s. When writing works properly, its very words and structure should relate us to our world—assuming that we have a real world to relate to.

If written language is no longer an organic outgrowth of people’s lives and environments, how can it be used to communicate the urgent problems of those lives and environments and how can it help in the search for practical and lasting solutions? It won’t do to say that we will simply become a postliterate, oral/electronic culture where written communication is merely rapid speech made visible, as in text messages. Writing can be and should be more than frozen, spur-of-the-moment speech—it is thought enhanced by time and care, and connected to nature and history. It is the essence of human permanence.<sup>5</sup>

But it does not do to dwell on these things for too long a stretch. So if you will excuse me, I need to get away to my garden, as I did on that first day of overwhelming discontent with my students’ writing. There are no potatoes to be planted, but I have to see whether the chicken wire fencing is keeping the rabbit away from my carrots and radicchio.