

# The Death of Progress and the End of Imagination

by William M. Reichert

For decades we have been deluding ourselves about the pace of progress and the outlook for the future. We need to reset our assumptions about what we can and cannot achieve, and we need to reevaluate how we can best promote progress in the future.

The pace of progress in the 20th century was blinding. Viewed from the perspective of my grandfather's parents, who started a family in a modest but comfortable house outside Louisville at the end of the 19th century, the world into which my children have been born is unimaginably different -- and breathtakingly more wonderful -- than their world.

What would they consider the most dramatic and impressive changes? It's hard to say. So many mundane things we take for granted would be spectacular to them: the pervasiveness and affordability of the telephone, electricity, automobiles, movies, radio, television, indoor plumbing, refrigeration, air conditioning, fresh meats, fruits and vegetables. Certainly air transportation and space exploration would amaze and delight them. The accessibility of virtually every corner of the world -- on the nightly news or as a vacation package -- would add an entirely new dimension to their social, political, economic, moral and religious perspectives.

My grandfather was born into a world in which it was common for newborns to die. Single parents were also fairly common, but for a different reason; my grandfather's father died when he was two, and my grandfather's older siblings were sent off to Richmond to be raised by their aunt and uncle. Life expectancy in the United States in 1900 was 51 years. There were no immunizations or antibiotics. People died or were

crippled by diseases like typhus, pneumonia, tetanus, influenza, tuberculosis, smallpox, polio and measles. Cancer was not a significant killer -- most people didn't live long enough to die from it.

The idea that you could call 911 on your cell phone and an ambulance would arrive in a few minutes to take you to a hospital would be amazing, not to mention all the interventions that are now possible in the modern hospital. In 1900, the greatest value of a hospital was its role as a quarantine, keeping the infectious away from the healthy population.

Of course, my great grandparents would be equally overwhelmed by the horrors of the past 100 years, in particular our expanded capacity for destruction and genocide, thanks to progress in the technologies of propaganda and armaments. But certainly evil has always existed, and the benefits of progress have clearly outweighed the misuse of science and technology.

### **So, Where is the Future?**

From our perspective at the beginning of the 21st century, it seems as if the pace of progress has, if anything, accelerated, with no sign of abatement and no limits to advancement. In the '60s and '70s, we had a brief crisis of confidence in science and technology. The byproducts of progress seemed to be trending toward our own destruction: nuclear proliferation, environmental toxins, population growth, limitations in food production, water and energy. And in the '80s, even the international financial system that global communications and transportation made possible seemed to have overreached itself.

But we have overcome these doubts – for the most part – and now the future seems limitless. From time to time an international conference on global warming or the ozone layer or aids stirs in us an uncomfortable anxiety that all is not well, and there are limits

to our ability to control our destinies. These concerns pass quickly, however, and the possibility that an asteroid might hit the earth in 30 years commands more public interest.

And so we have arrived in the Future! But as we look around, we realize the Future ain't what it used to be, as Yogi Berra might have said.

Where are the Jetsons? Where is HAL? Where are the robots and the moon shuttles and the two-way wrist radios? Where is the orgasmatron? Where is immortality and fusion and a cure for the common cold?

Why do people still freeze to death on the street? Why do crosses still burn and churches explode? Why do children die from hamburger meat? Why can't we figure out how to stop cancer or aids? Or cholera or child abuse?

In spite of all our spectacular success over the past 100 years, there is no question that the Future has failed us. The Promise of Progress has not been fulfilled. From the perspective of 50 years ago, when my parents were starting a family, the future has not delivered. The house and the schools and the community in which my children are growing up outside San Francisco are not significantly different from those where I grew up outside Chicago. And they are certainly not as safe.

And yet, it certainly feels like the pace of progress is faster than ever. We are told that Knowledge is doubling every few years, however that gets measured. In business, we know that product life cycles are shrinking; new science, new technologies, new methods are transforming every industry. "Old" companies -- Digital Equipment, Apple Computer, MCI -- are the prey of hungry, fast-moving new companies. The "New Economy," driven by information technologies, will change everything.

The process of "creative destruction," the prime moving force of market capitalism, is accelerating -- without regard for city, state or national borders. New companies and new products are being created faster than ever, and all companies, old and new, are

scrambling to "reinvent" themselves, or sell out, before they are destroyed. Wealth is being created and obliterated at an unprecedented pace. Thousands of millionaires have been created by Microsoft and Cisco, despite their recent trials. Meanwhile, scores of new billionaires have come and gone with amazing rapidity as their companies promise to invent the future, and then fail to meet that promise.

### **What is Progress?**

With all this accelerating change, where is the Progress? This is not a sentimental question. There is a fundamental historical process going on, and we are missing the forest for the trees. In fact, from an objective historical perspective, after a transformative burst of progress in the first half of the 20th century, the pace of progress has slowed dramatically over the past 50 years. This seems like an heretical statement, but by most measures, it's true. And with this slowdown in progress has come a withering of imagination and a loss of vision. The optimism of the postwar era has been replaced by an unease, and with this unease has come a selfishness.

Fifty years ago, as a nation entering the second half of the 20<sup>th</sup> century, we felt we could accomplish great things technologically, militarily, economically and politically, domestically and internationally. As a nation, and as individuals, we had faith in the potential of grand visions, faith in the inevitability of Progress. The reconstruction of Europe and Japan, the war on poverty at home, the civil rights movement and the antiwar protests of the '60s were founded on optimistic visions of the future – on a faith that we could do better, and that we had the resources to do better, and that individual citizens had the right to demand that we do better.

We failed to fulfill these visions. We have achieved some spectacular victories in the last 50 years – most notably the end of the Cold War and the villagization of the planet – but we no longer have faith in Progress, and we no longer imagine the future as a place where the life is greatly different than today.

This, of course, raises the question: What is Progress? The answer is highly subjective -- Progress measured by what and for whom? It certainly feels like we have achieved spectacular advances in science and technology. But are drug addiction, homelessness and child abuse relieved by scientific and technological achievement? It seems not. Apparently, technological progress cannot address these social issues. If the wonders of technology and medicine do not reach the masses of the Indian subcontinent, does that diminish the accomplishments of scientists and engineers? No, certainly not. But it does call into question our faith in the relentless success of technological achievement.

### **The Recent History of Progress**

Our progress in matters social and economic are certainly tied to our progress in science and technology. But history tells us that the relationship between the two domains is complex and is often mediated by other factors. The industrial revolution was both the result of technological advancement (improvements in power generation, machinery and transportation) and stimulated further technological advancements. Simultaneously, the political, social and economic context of the nineteenth century -- the emergence of liberal democracies and the creation of the bourgeois merchant class -- were equally important in the propagation of the industrial revolution and the development of commercial scientific and technological organizations.

The political and social achievements of the nineteenth century created the environment for an explosion of scientific progress and technological advancement that made the early twentieth century so incredibly exciting. The telephone, the light bulb, the internal combustion engine, flushing toilets, sterile methods and electric power generators were all invented in the late nineteenth century, but they were not broadly implemented until the early twentieth. And then came airplanes, tractors, radio, refrigeration, electric appliances, antibiotics, television, fertilizers, jet engines and computers -- all developed in the first half of the twentieth century.

These advances, in turn, both caused and enabled a transformation in the way life is lived in the United States. The initial effect was the urbanization of society. In 1900, America was overwhelmingly a rural and agrarian economy, despite the industrial revolution. By 1960, the transformation of the United States into a metropolitan society was largely complete. Despite the decline in the relative size of the agriculture economy, and rapid increases in population, increases in agricultural productivity enabled the United States to remain a net exporter of agricultural products.

The urbanization of society and the creation of a “worker” class created national public health and safety challenges of unprecedented scale. One of the most unnoticed engines of progress in the past century was our success in public health and safety. The need to provide clean water, sanitary housing, edible food and safe working conditions required cities, states and the federal government to invent public utilities and workable mechanisms of regulation and inspection that are more responsible for improving the quality of life in this century than any other scientific, technological or political advance.

Virtually all of the improvement in the life expectancy of an American in the past century came during the first half of the century. And the improvements since 1950 have come not from advances in medical technology and pharmaceuticals, and certainly not from biotechnology and genetic engineering, but from access to nutritious food, adequate housing, basic medical services, and sanitary delivery and child care facilities.

Unquestionably, the invention of sulfa drugs and penicillin helped, along with the development of vaccines. But equally important was the development of public health standards and policies that ensured that almost every school child has access to these vaccines.

If progress is measured by the quality of life, we have made little if any progress over the past 30 years. Most measures of health and quality of life – disease, crime, and poverty, even home ownership, education and income -- have shown little or no improvement for most of the last three decades. One notable exception to these trends is infant mortality, which, contrary to popular wisdom, has dropped dramatically over the past 30 years. So,

for those of us under 1 year, life has improved significantly; once we can stand up, there's not a lot to look forward to. As we disdain the self-centeredness and anomie of the so-called Generation X and the loss of optimism across society, perhaps we should be looking to the loss of progress as the root cause.

### **Pace vs. Progress**

It feels like things are happening faster and faster every day. It feels like everything is changing more rapidly than before. What we buy today is out of date tomorrow. What we knew yesterday is no longer relevant today. At work, competition is greater and the urgency to execute is enormous.

If this is not Progress, then what is it we are experiencing? Clearly, the pace of life has accelerated. And, as the Red Queen explained to Alice, you have to run twice as fast just to stay in the same place.

What is the difference between “pace” and “progress”? This is what lies at the heart of the information revolution. The effect of all the innovations in information technologies over the past century – telephones, telegraphs, radio, television, direct mail, facsimiles, cable, satellites, trade magazines, computers, cell phones, pagers, email and the Internet – is that each of us is confronted with an increasing number of “information events” every minute of every waking hour of every day, some the result of voluntary pursuits, such as reading a trade magazine, and others involuntary, such as advertising. One study indicates that we are subject to approximately 200 different “communications” per day, including ads, calls, emails, articles and questions. (That actually seems low to me.) At the same time, we are provided with technologies that enable us – and therefore obligate us -- to respond to these interventions.

It used to be that we could fill out a business reply card and wait for a few weeks before anything happened. Now we hop on a website, fill in our particulars and immediately we have a response, which generally requires us to do more processing. Viewed from the

perspective of Frederick Taylor's time and motion studies, we are each involved in an increasing number of transactions every day. The accelerating pace we experience is really the increasing number of transactions per hour – emails, phone calls, faxes, advertisements, hallway meetings and questions from our kids.

As we have seen, real progress is mediated by factors other than technology – social forces, politics and the limits of human physiology and the environment. If the acceleration of daily life is not progress, does it hold the promise that we will eventually realize the fruits of this acceleration in the form of tangible progress? How will the information revolution change the future in ways that will substantially enhance the quality of life for my children or their children? Or have we seen the end of progress?

### **The Knowledge Society?**

More of the artifacts and phenomena of everyday life have become mysteries to us. This is not a new experience for civilized man. The evolution of human society, from our early hunting-gathering ancestors, to organized agriculture, to crafts and trades, to mercantilism, to the industrial revolution, to the “knowledge society,” has been the story of the specialization of knowledge and skills as comprehensive general knowledge has been harder and harder to attain.

As a result, we have as a species greatly expanded our understanding of the universe, from the cosmic level to the quantum level, and most everything in between.

There are, however, some notable exceptions: Although our scientific understanding of the physical brain has increased dramatically over the last century, an understanding of the processes of thought and knowledge has eluded the most brilliant scientific researchers. Similarly, we have more elaborate mathematical representations of the workings of gravity than we did 400 years ago, but we don't really “know” much more about gravity than Newton did.

A generally educated individual today has a comfortable command over a wide array of topics that puzzled the leading luminaries of 100 and 200 years ago – even 50 years ago. The basic concepts of genetics, nuclear power, interplanetary travel, disease, geology and electronics seem to have emerged only recently in the history of mankind.

And yet, why do we feel so stupid? As Jonathan Schell notes, “We may live in an information age, but that information, it appears, resides elsewhere than in the minds of citizens – as if while computers were being stuffed with information, brains were emptying.” Schell is bemoaning the uninformed electorate, but his comments extend across our lives. It’s relatively easy to understand the principles of an oven, and yet the principles of the microwave right above it are somewhat more impenetrable. It’s easy to understand the workings of a traditional mechanical clock, but how does a digital watch work? Even computers seem relatively straightforward, compared to the Internet.

One of the greatest ironies of the Knowledge Age is that we have not been able to make any significant progress in the transfer and acquisition of knowledge. Over the past 30 years there has been virtually no increase in the academic achievement of the broad majority of students. We have gradually, and significantly, increased the level of education of minority students in the U.S., as measured by graduation rates and college-level matriculation. Contrary to popular belief, literacy and numeracy in the United States has improved steadily. But the level of academic achievement of the top five percent of students in the U.S. has been flat or has declined, as measured by standardized test scores. In other words, our smartest students are not any smarter than they were decades ago. With all our advances in communications and information processing, we have not found a way to advance the human learning process.

Meanwhile, the most heralded accomplishment of the second half of the century, the computer revolution, has yet to weigh in on the scales of progress. Economists have struggled mightily to find a positive economic contribution from investments in computers. Alan Greenspan has posited that technology is the only way to explain recent improvements in productivity, but even his modest claims are challenged by some

economists. Their research is misplaced, however. Traditional input-output measurements of economic contribution do not measure the greatest contributions of computers and computer networks – namely, enabling economic activity that could not have occurred otherwise. The expansion and specialization of capital markets domestically and internationally could scarcely have taken place without the computer networks over which they operate. Companies could not manage production and distribution organizations internationally without the computer networks by which they are managed.

For the average American, however, the computer has not directly enhanced the quality of life or changed the way of life. Certainly computers have improved the design of many products, and have enhanced the delivery of many services, but compared to the telephone, the car, the airplane, radio and television, the computer has been evolutionary, while the impact of these earlier innovations was revolutionary.

On the other hand, internationally, for millions of people – possibly billions – the indirect effect of computers and computer networks, namely global communications, production and commerce, has drawn them into the global economy, usually with a resulting increase in their standard of living. In this regard, the computer has been a significant force for the propagation of the American economic model and the distribution of the benefits of progress. While it may be true that the pace of progress slowed in America in the last half of the 20<sup>th</sup> century, the benefits of progress have not been realized across most of the world's population until very recently, if yet.

### **The Future of Progress**

It would, of course, be silly to suggest we have reached the end of progress, that this is as good as it gets. Clearly, many of the advances science and technology have been promising will come to pass – it will just take longer than anyone thought. Progress will continue, albeit at a slower pace for the American and Western European middle classes than for the emerging middle classes of Asia, Latin America and Eastern Europe. In the

U.S. and Western Europe, we are on back end of an incredible technological surge. We have realized most of the immediate benefits of that surge decades ago, and since then it has been washing over the rest of the world, and into crevices that did not benefit from the initial surge.

Within the United States, the most significant gains over the past 50 years have been made by those who did not benefit earlier in the century, namely minorities and the rural poor. Improvements in public policy and economic infrastructure have enabled blacks, Hispanics and the poor to make substantial gains in life expectancy, education and income. Nevertheless, these measures are still far below comparable measures for middle class whites.

Around the world, the last few decades have seen many examples of enormous progress in many dimensions – agricultural production, nutrition, sanitation, life expectancy, infant mortality and income. Again, these gains are not evenly distributed, nor have they typically reached the level enjoyed by middle class America in 1960. Until recently, many assumed that the United States would be eclipsed in the 21<sup>st</sup> century, but it now seems clear that the rate at which progress is distributed is slower than we assume.

Looking forward, the emerging middle classes of the successful economies in Asia, Eastern Europe and elsewhere will see rapid improvements in the quality of life. There will be bursts of achievement in several countries, and fallback in others. The U.S. will certainly not maintain indefinitely the level of unchallenged dominance it re-established with the collapse of the Soviet model and the revealed instability of the Asian models. But there is no reason to believe that the American model will be surpassed or replaced by another model of progress.

We have always been overly optimistic about progress – even when it was rampant. As one futurist pointed out, the Future always comes slower than you expect. The anecdotes about the folly of futurism are many and fun to recount. An IBM executive predicted at the dawn of the computer age that a handful of computers would be sufficient to provide

all the computing power the world would need. AT&T brought out the videophone in the '60s, and it has yet to become commonplace. Postwar atomic energy enthusiasts predicted that energy would become virtually limitless and almost free. Economists predicted that the average working day would shrink to three hours.

With the commercialization of the microprocessor in the early '70s, we thought the robots of science fiction would soon become reality. Our success with polio, tuberculosis and smallpox led us to believe that we would soon find the cure for the common cold and crack the mystery of cancer. The explosive growth in the productivity of our economy in the first half of the century led us to believe that we would soon enjoy lives predominated by leisure, punctuated with a few hours of work each week.

So, what went wrong? Why are we so consistently inaccurate in our projections? Again, this is nothing new. We have always wanted to believe that the step between possibility and reality is short and simple, and we are disappointed when it is not. Having achieved the extraordinary feat of landing a man on the moon in 1969, the vision of 2001 offered by Arthur C. Clarke seemed very reachable. And yet we are nowhere near having a HAL computer, or a colony on the moon, or even a decent videophone. (We have, however, achieved peaceful collaboration with the Russians in space.)

Indeed, Clarke's thesis in 2001 was that the achievements of Man have been guided by an external intelligence, not of this earth. Looking at the acceleration of human accomplishment over the past few hundred years, and especially over the past 100 years, in the context of the thousands of years of human civilization, it is almost hard to believe that there is not some external force at work.

This faith in the inevitability of progress characterized and invigorated the American spirit. That may sound trite and chauvinistic, but it is true, and it is an important part of the success of the American model. With confidence in the inevitability of progress, a society can take a positive sum approach to solving problems. If the pie is going to grow, I can afford to give up a portion of it today with the expectation I will have more

tomorrow. Much of the sclerosis that has afflicted Europe since its postwar recovery has been the result of a zero sum mentality – your gain is my loss, and so I am entitled to make you share it, or give it back altogether.

### **The End of Imagination**

With the slowdown in the pace of progress, we run the risk of losing faith in the inevitability of progress. It is the faith in progress that motivates societal initiatives. If we lose that faith, we lose our imagination and we lose our hope. The legislation resulting from the civil rights movement, from the war on poverty and from the environmental movement were all based on a faith in progress. In the case of the environment, we have succeeded beyond most expectations. In the case of civil rights, we have made enormous progress, but the challenge still seems large. In the case of the war on poverty, we have failed.

We need to learn from our successes and from our failures. To the extent that each of those initiatives succeeded, the lives of millions of individuals were significantly improved. To the extent that each of them failed, the lives of millions have fallen short of their potential.

At the end of the day, the balance of successes and failures makes a difference. And over the past several decades, the balance has been slipping to the debit side for too many Americans, while too few have been conspicuously successful. The point is not that we run the risk of a revolt of the disenfranchised. Rather, we run the risk of giving up on the future. We no longer seem to have the imagination that is needed to at least try to make the future better. We are more narrowly focused on our individual ledgers. Who do we expect will address the issues that will make a difference in the lives of our children?

For me, this struck home a few years ago at a technology conference at which a few hundred anxious high tech executives were trying to figure out the Next Big Thing. During a break, a friend was asking me about my young children. As we talked about the

concerns we had for safety of our children, I suddenly realized that children today are generally less safe than I was as a child. I found myself disoriented by the contradiction: How could it be, with all the progress of the last 30 years, with the end of the Cold War and the abatement of the threats of pollution, that my children could be less safe than I was? And what prospect is there that this will change? What will need to change to make my children at least as safe as I was? The same prosperous communities in which doors were left unlocked and children played unattended years ago are now wired by ADT while the children are never allowed to leave an adult's sight.

This is progress? I looked around at my colleagues at this conference. Those who were not white were likely to be Asian. Few and far between were the African American or Hispanic attendees. I could see no prospect for my children to live in a color-blind society, based on how little we have really achieved over the past 30 years.

In the past few years I have realized that many of the problems in society that I assumed my generation would solve will not be solved in my lifetime – nor even in my children's lifetime. The postwar generation and my generation believed that we could achieve world peace, end poverty, eliminate racism and conquer disease, space and time. (When I was growing up, I *assumed* I would travel in space.)

As a nation, we have no longer have any hope that our society will successfully address the problems of poverty, racism and violence. We may believe we can ameliorate them, somewhat. Our vision has shifted from the optimism of a “war on poverty” to the resignation of a “safety net.” The best we can hope for is that the success of the elite will trickle down to the desperate. Our public policy battles are over the size of a tax cut, not over a vision of our future.

This may be our practical reality. But this is hardly inspiring. Where is our imagination? Where is the vision and spirit and energy to address the challenges facing us and give hope to our children?

If productivity and incomes were growing more rapidly, if we were curing cancer, if we broke our dependence on fossil fuels and found abundant sources of cheap renewable energy, if we had computers that actually did more work and demanded less effort, if we had equipment and appliances at home and in the office that were more reliable and easier to use – if our science and technology were really living up to their promise – we would have the time and the resources and the vision to fight for the future, to fight for our children’s safety, for our children’s education, and for a culture in which no one is judged by the color of their skin or the accent of their speech.

### **A Source of Hope**

Some believe there are no patterns in history; rather the patterns of history simply reflect the inability of historians to accept the randomness of events. But clearly things happen for a reason. The failure of the Soviet model was both predictable and explainable. The weaknesses of the Japanese model and the Tiger models are also explainable in hindsight, if less predictable.

The American model is not only once again pre-eminent, it is on the rise. More so than any other social system, the American model has proven itself capable of productively generating and exploiting advances in science and technology. To the extent that our model is replicated – even in modified form – around the world, we can be confident that the pace of progress globally will accelerate, and billions of people will become adherents to the faith in progress.

We are not running out of steam; we are just through the easy part and need more resources to push to the next level. A more vibrant and more closely integrated global economy is our best hope. We need not fear competition from the rest of the globe. The data on that issue is in: We benefit far more from the success of our neighbors in an open global economy than from their failure.

The great success of the American economy over the past 50 years has been, on the surface, the internationalization of our reach, our resources and our markets. Fundamentally, however, the greatest success of the American model over the past 50 years has not been economic or technological – it has been the success of the American Idea. The American Idea is not at its core about “capitalism” or “free markets.” It is about human rights, individual freedom and equal justice, which are the foundation of an open society. Without equality, liberty and justice, capitalism and individual initiative can flourish for a time, but they will eventually fail. We ourselves are far from perfecting this Idea, and so perhaps it is arrogant to call it our own. But we’ve done a better job than just about any other society on the globe.

So, the hope for the future lies in the propagation of this Idea. Political and military events have mitigated the progress of the open society in the past, and they will in the future. But the need and the opportunity are emerging to expand the penetration of this Idea and take advantage of the globalization of human society to reinvigorate the pace of progress in science, technology and the quality of life.

-- Palo Alto, August 13, 2001. Contact Bill Reichert at [reichert@garage.com](mailto:reichert@garage.com).