

Revolutionary Times in the Age of the Rapid Depletion¹

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I am always honored and delighted to share ideas with you and to express them in such a powerful space and among a thoughtful and supportive community of friends, colleagues and neighbors. But there is a greater urgency in my tone this morning.

Perhaps it is a function of my turning 50 this year. In addition to receiving, in the very same week, both my AARP membership application and an invasive medical procedure that now regularly greets American men who reach the half century mark, I experienced a midlife crisis of the metaphysical sort (which, I suppose, is safer than the physical kind), and not surprising for a philosopher. As an applied or practical philosopher (I know, that sounds like an oxymoron), I try to avoid the dusty attic of our civilization's past and prefer instead to spend time down in the basement where, like the basements of our own homes, all of the social, political and technological systems and foundations are located, and that operate—or fail to operate—without our taking notice of them until it's rather late in the game. I've been down there now for twenty years and it seems to me that things are only getting worse, and more quickly. And yet the homeowners rarely take notice.

My crisis was additionally sparked by a book I am writing that is focused on the significant—indeed, daunting—social and cultural challenges we face in a world with too little carbon below the ground—oil and natural gas—and too much of it up in the atmosphere—in the form of carbon dioxide. “Post-Carbon” and “Peak-Carbon” are terms that reflect a number of trends and discoveries that seem to indicate that the modern world will need to learn how to live without the vast pools of carbon energy on which it has come to rely, and for which no obvious alternative will be available during most of this century. I live day-to-day with the exponential data of our times and they have made me a student of the boundaries and limits of both the living Earth and our human form.

Whatever the reasons, I have come reluctantly to a perspective of which I am now convinced and to which I am fully committed. We are living in revolutionary times!

I wish I could tell you that I was exaggerating this challenge in an effort to focus your attention this Sunday morning. When I was in the 10th grade my high school chemistry teacher, Mr. Rizzo, would frequently tell my classmates and me that we were the worst class he ever had. He finally admitted that he told every class, every year, that they were the worst class he ever had in order to motivate them; but that unlike those other classes, our class really was the worst.

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Like Mr. Rizzo I honestly believe that we really do face a challenge of the sort that will be transformative. Most of us are familiar with the phrase “up a creek without a paddle.” (The phrase is actually a bit more colorful than that.) I think the world and its inhabitants are up a creek—a carbon creek—**with** a paddle, the one that put us there in the first place. The paddle is the mindset of limitless expansion and consumption that we are unwilling to discard. This mindset won’t get us out of our predicament and it actually makes matters worse. Meanwhile our boat—the living ark of Earth—is listing terribly.

What we must do instead is toss the paddle and, quite literally, begin to change our minds, our worldview, and our everyday lives. We must learn how to function, not just as individuals, but as whole civilizations, on the only Earth we will ever know, a living, complex, and interconnected sun-powered ecosphere, complete with all of its, and our, limitations. This change of mind is a conceptual revolution to be sure, but we are naïve if we think we can pull it off without a good deal of active resistance and protest. It is also likely to require a change of lifestyle that is as inconceivable to us today as the invention of the modern factory or a heart transplant would have seemed to either the peasant or the professor of medieval Europe. The good news, if I can describe it that way, is that only by accepting this challenge in radical and revolutionary terms will our odds of success change from “fuggedaboutit!” to “long shot.”

Soon after that radical declaration in July of 1776, Richard Price, a British Unitarian minister, called the American Revolution the most important event in the history of the world since the birth of Christ. I believe that our revolution is the most important event since the invention of agriculture nearly 12,000 years ago. Those first farmers in the Middle East’s Fertile Crescent began a mining operation that continues to this day: the mining of high-energy carbon. In breaking the sod those early farmers were breaking from nature, living by their own wits, and appearing—at least temporarily—to exceed the boundaries and limitations that govern all life, and the Earth itself.

This story of the human break from nature is very familiar to us. In the Genesis creation story Eve and Adam are tempted by a “tree of life,” which, some scholars claim, was not a tree at all, but rather a grass: wheat, one of the first wild grasses to be cultivated. Scholars also point out that the first farmers used snakes to guard their granaries against hungry rodents. The temptation that the serpent and wheat grass first presented to Eve, a name that means life itself, was for a more secure and plentiful life outside of nature’s boundaries. And why wouldn’t the first woman, and soon-to-be first mother, want agriculture’s promise of plentiful food and security for her offspring even if it meant, as the story tells us, more work for her husband and increased pain during childbirth for her and all women, no doubt a consequence of healthier, larger, babies?

We are told that the human couple was expelled from nature’s garden, but it seems more likely that they left on their own accord—the original sin of willfulness—once they recognized their own powers to cultivate a grass that even today is the world’s second largest cereal crop. More important, I think, is the warning they ignored about the danger of succumbing to this temptation to live outside of nature’s boundaries; namely, that they “would surely die.”

Despite that ominous warning, Adam and Eve and their offspring never looked back. The soil of the Fertile Crescent was the first carbon pool to be tapped and it brought with it the first increases in human population and atmospheric carbon.² The second high-energy pool—the stored carbon of the Earth’s forests—furthered human dominance of the world and made the bronze and iron ages possible. Wood served as the preeminent energy source in the United States during its first one hundred and fifty years.

The third carbon pool—coal—fired the industrial revolution and the exponential growth of the human population, and today remains a critical source of energy. In 2004 the world used over 6 billion tons of coal, and by 2030 the demand is projected to be almost 11 billion tons annually. Oil and natural gas are our most recently tapped carbon pools, and together they fuel the global economy. Oil is currently consumed at the rate of 85 million barrels/day around the world, and the demand is expected to grow to 113 million barrels/day by 2020. The price has certainly grown. The world used 100 trillion cubic feet of natural gas in 2004, and is expected to need 150 trillion cubic feet by 2020.

Soils, forests, coal, oil, and natural gas are the primary feedstocks of our modern civilization. And for those of us who have been alive these last fifty years in industrialized societies, particularly in America, it has been a wonderful ride, an amazing and blazing run on the carbon bank.

But as the data continue to come in, it appears that the processes driving our exponential growth may be at their peaks. Our parents’ generation rode this exponential wave to the top and it looks like our generation will be the first to be riding down the other side of the peak, the first to usher in what Wes Jackson calls “The Age of the Rapid Depletion.” Our carbon pools are drying up. Our carbon sinks are clogged. And we are told to expect at least one more doubling of the human population in the next thirty years. Indeed, the warning in Genesis to avoid the temptation of a boundless self-sufficiency lest we surely die is still very much with us today.

“Yes, but revolution,” you say, “that’s surely too radical a solution.” After all, who wants to have to change too radically or to risk too much? Thomas Paine, in his pamphlet *Common Sense*, recognized this reluctance when he said that “until independence is declared, the continent will feel itself like a man who continues putting off some unpleasant business from day to day, yet knows it must be done, hates to set about it, wishes it over, and is continually haunted with the thoughts of its necessity.” In our own time it is fair to ask why a revolution is necessary when we have progress, increased technological efficiency, and the various organic, environmental and sustainability movements to help with the transitions ahead.

Here’s why.

What we commonly call “progress” has produced some of the very problems we expect progress to eradicate. Advances in agriculture and medicine have led to the exponential

² See William Ruddiman’s *Plows, Plagues, and Petroleum: How Humans Took Control of the Climate*. Princeton, NJ: Princeton University Press, 2005.

growth of the human population, and that has put increased demands on topsoil and fresh water. Technology has made more of the world's fossil fuels accessible, leading to their increased consumption and depletion, and an increase in atmospheric carbon.

Technological optimists talk about solving our problems with greater efficiency, but paradoxically efficiency leads to higher consumption. It's called Jevons Paradox, named after the man who demonstrated that as 19th century Great Britain became more efficient in its use of coal, it actually consumed more of it. Even if every car in the world was a hybrid, and every light bulb a compact fluorescent or LED, the continuing growth demands for cars and light bulbs worldwide would easily dwarf the savings. And new forms of energy will take time to develop. The late Cornell physicist and Nobel Laureate Hans Bethe used to point out that no form of energy – from the draft horse to coal to petroleum to atomic power – ever became a fuel for commonplace technology in fewer than fifty years.

Sustainability, now practically a household term, is starting to set things right and it does offer a path toward living well in a limited world. But in its current form it doesn't require enough from us. It is still too laden with a near fundamentalist belief in technological fixes, and still stuck in the old "the-Earth-is-a-machine" way of thinking. It is just a tad presumptuous too. The wise ones (*Homo sapiens*) have devoted 12,000 years to whittling away at the Earth's vital and sustainable forces, all the while mistaking human cleverness for nature's creativity, and now insisting that what the ecosphere has been providing all along is actually our job, and that somehow the great consumers of the Earth can now become its benefactors without having to sacrifice their high standard of living. If the Earth had eyes they would be rolling.

Central to the problems we face is our reluctance to see them as nothing more than temporary downturns or the usual up and down cycles of economics or climate. They are not. A barrel of oil—a mere forty two gallons—costs nearly \$110, while a human slave—of which there are now approximately 27 million in the world, more than at any other time in history—can be purchased for a mere \$40. Add another three billion people to the planet in forty years while simultaneously trying to cut CO₂ emissions by 80%. Find livelihoods, food, fresh water, and shelter, as well as education, health care, and stable governments for these numbers without causing species extinction, soil degradation, civil wars, nuclear wars, and mass migrations. Try running any of the world's major cities—their subways, waste water treatment plants, and transportation, lighting, and heating infrastructures for even a few days on low density solar and wind power.

It is time to be more truthful with our language.

We are living in revolutionary times made necessary by the substantial and sustained failures of current worldviews and global systems to provide the planet's everyday citizens with lives sufficient in health, freedom from want and fear, and with the prospects of similar lives for their children. These failures are the self-evident truths of our time: the degraded lives of billions of citizens whose lives were promised to be improved in the first place; mass extinctions of species; an overheated climate; and an unprecedented running-down of the ecosphere on which all life depends.

The worldviews and systems responsible for these failures go by many names: individualism, capitalism, scientism, materialism, corporatism, and globalism, to name a few. What they are called is not important. What is important is that they share in common two bedrock beliefs that have become the intellectual DNA of our thoroughly modern minds: first, that the natural world is without limit in terms of its sources of energy and materials, and its sinks for wastes and pollution; and second, that the human intellect is sufficient to understand, control and operate the Earth as a luxury-machine for the exclusive material happiness of human beings; again, without limit.

It is now necessary to overturn these false and dangerous beliefs, to limit the power of their many adherents, and to usher in a new way of thinking and living in the world. This is our revolutionary moment.

In such times we must refuse and reject attempts by the current systems and their defenders to make accommodations, reconciliations, excuses, and minor concessions. The current systems can neither fix the problems they have created nor be made compatible with the emerging ecospheric perspective, any more than the British monarch could have been made compatible with independence-minded colonial Americans, or medieval scriptural authority with 17th century scientific discoveries.

In such times we must recognize the signs of seismic social and cultural shifts that are already under way, and engage fully our talents to bring forth an alternative worldview, a new Enlightenment that values the ecosphere, protects human freedom and dignity, and rejects the belief that we can master the Earth and treat it merely as our personal supermarket, playground, laboratory and dumpster.

We must live everyday with, and deliver to others, the uncomfortable and terrifying facts about the failure of the current worldview to solve its own problems, and we must close off the usual psychological escape routes that keep too many of us in a complacency that is now bordering on delusion.

In these revolutionary times we must organize and mobilize the like-minded at the “street” level; that is, at the level of action and application appropriate to one’s location and station in life. Such actions would include teach-ins, protests, boycotts, street corner pamphleteering, and blogging; bringing the revolutionary message to every board and committee on which we sit; and demanding that our elected officials, corporate executives and educational administrators confront the real problems of our time.

Active engagement and resistance does not have to be violent, but it must be as single-minded and insistent as someone yelling the “f-i-r-e” word in a crowded theater when there is, in fact, an f-i-r-e. That’s not radical; that’s prudent and morally required. As Frederick Douglas said, "Power concedes nothing without a demand. It never did and it never will. If there is no struggle, there is no progress. Those who profess to favor freedom, and deprecate agitation, are men who want crops without plowing up the ground, and rain without thunder and lightning."

To state unequivocally “These are revolutionary times!” is an admission that the world is changing in ways that we would not necessarily choose; that it must change even if it goes against what we would otherwise choose; and that we can no longer choose to resist it.

It is so much easier to hope for a miracle. But our best and most realistic hope lies in embracing the revolution before us. With vigor and creativity we must help create the intellectual and conceptual scaffolding necessary to build a new worldview; in the words of the American founder John Adams, “to start some new thinking that will surprise the world.” Every category of human thought needs reorientation within the boundary conditions of our sun-powered ecosphere. We need an ecospheric science, spirituality and economics; an ecospheric politics, education and technology; an ecospheric justice, history and architecture; an ecospheric engineering, agriculture, and philosophy; and ecospheric conceptions of rights, property and happiness. Here’s a rough draft of our ecospheric “to-do” list.

- Reduce the industrialized world’s carbon footprint eighty percent by 2050.
- Reduce human population eighty percent from its current level without famine, war, viruses or the loss of human dignity by 2110.
- Eliminate the automobile as a form of personal transportation.
- Create political and social systems that run on a solar economy.
- Revise the scientific method so that it more accurately balances the discovery of new knowledge with moral considerations and precaution.
- Devise viable models of happiness and success that do not require economic growth and increased consumption.
- Make the virtues of humility, cooperation, generosity, gratitude, kindness and thrift cool again, or hip, or bad, or the bomb, or whatever word or phrase you use to describe something really good and worth having.

This is the century where we get a couple of chances to move from the age of the rapid depletion to something less rapid and less depleting. Ready or not we will be carried as in a river-current overrun with a spring thaw. We will steer our lives and cultures at first with more hope than effectiveness, and we will fret and worry a good deal. We should consider it an exciting time, filled with opportunities to think big thoughts and to imagine wonderful alternatives; to help create a worldview where humans can feel at home on an Earth that is very much alive, interconnected, filled with morally valuable species, and limited in terms of how much it can provide; where human ignorance about our living Earth will always exceed our knowledge; and where our curiosity promotes understanding—not subjugation—of the Earth’s complexity, beauty and resiliency.

It's time to accept the creative limits and boundaries that gave us the universe, the sun-powered Earth, and our own lives. "As T. S. Eliot said, The fire and the rose are one."

It's time to change our minds and our lives.

The revolution is here.

It's time.