

INTRODUCTION

When I was a boy in the countryside — fifty years ago and more — people [gardened] for self-sufficiency, for it would not have occurred to them to do otherwise. People were self-reliant because they had to be: it was a way of life. They were doing what generations had done before them; simply carrying on a traditional way of life. Money was a rare commodity: far too valuable to be spent on things you could grow or make yourself. It was spent on tools or fabric for clothes or luxury foods like tea or coffee. They would have laughed at a diet of store-bought foods. . . .

—John Seymour, *The Self-Sufficient Gardener* (1979)

I am in the cabin of an MD80 jetliner en route from San Francisco to Dallas. It is night, and as I look out the airplane window I see a dense web of lights spread upon the darkened landscape. It is a beautiful sight, and yet a profoundly disturbing one. Aside from streetlamps, nearly every one of those tiny lights emanates from a house, or from a car crawling across the landscape.

Each tells an individual human story of struggle for survival and prosperity. And each is in some way connected back to a fossil-fuel energy source.

That source has its own story — one that began hundreds of millions of years ago, but that will end within the lifetime of children now living, as our fossil-fuel inheritance is burned once and for all. What will then happen to all of these lights — and to the lives to which they are tied?

It is a poignant thought, and an ironic one given the context in which it appears. I am looking out and down from the interior of a machine that is being forcibly thrust up into the sky — again by the burning of fossil fuels. The walls and fabrics that surround me are mostly made of fossil fuels. So too, to a large degree, is the computer on my lap.

As I think about my computer, the irony deepens. Just as I can look down from this airplane and take in a hundred square miles at a glance, I can take in information through my computer (when it is Internet-connected) and look down, as it were, on current events, human history, and human cultural geography as few humans could have hoped to do only decades ago.

And what a view one gets from this information pinnacle! A century ago our recent ancestors were riding in horse-drawn carts; today we have photos taken from the surface of Mars. We have landed humans on the Moon. We have covered huge expanses of our planet with seas of concrete on which to drive and park our billion cars. We have built skyscrapers and diverted great rivers. There are roughly as many humans alive now as existed cumulatively throughout all of the millennia prior to the Industrial Revolution. That means that a large proportion of all of the geniuses — and monsters — who have ever lived are alive today. And whenever one of these extraordinary individuals does something, we can hear about it instantly via our global communications networks.

Most of this edifice of modernity has been constructed within a single human lifetime: I still occasionally speak with people who can recall seeing the first automobile arrive in their town. And we are

seeing the brief flowering of industrialism, in all its magnificence, with our own eyes, in real time. What a show!

But that's not all we see.

We have climbed very high, but also very far out on a spindly ecological limb. We may live, as Paul Simon once put it, in “an age of miracles and wonders,” but we also live in a time in which several “storms” are colliding, as in the book and movie *The Perfect Storm*:

- **Resource depletion:** From the standpoint of the global economy, probably the most immediate threat comes from the depletion of fossil fuels (both oil and, in North America and Britain, natural gas). But fresh water resources, wild oceanic fish stocks, phosphates (necessary for agriculture), and topsoil are also dwindling.
- **Continued population growth:** While the rate of global population growth shows signs of slowing, the total reached six billion in 1998, and in the six years since that time we have added an additional 400 million humans — nearly the population of North America.
- **Declining per-capita food production:** For nearly the entire 20th century, food production outpaced population growth. However, world grain harvests for the past five years reveal a frightening trend: it appears that the trajectory of per-capita grain production has leveled off and may be beginning to fall, probably for a variety of reasons (including loss of arable land to urbanization, fresh water shortages, and bad weather).
- **Global climate change and other signs of environmental degradation:** Agricultural civilizations have developed over just the past few thousand years — an eyeblink in geological time. This has been a period characterized by a relatively stable, benign global climatic regime. Now that regime appears to be coming to an end, almost certainly as the result of a human-induced enhancement of the atmospheric greenhouse effect. It is unclear whether civilization can persist in a less favorable and less stable climate, as food production could be

even further imperiled. If the world's sea levels rise significantly, as they are predicted to do as a result of the partial melting of polar ice, many coastal cities would be inundated. Moreover, concerns are now being raised that cold, fresh water from melting Greenland glaciers may halt the Gulf Stream and plunge Europe and much of North America into a new ice age.¹

- **Unsustainable levels of US debt and a potential dollar collapse:** Since World War II, the world has relied on the US dollar as the basis for monetary stability. Increasingly, the US has taken advantage of this situation by running up ever-larger trade deficits and more foreign-financed government debt. The current level of American debt — internal and external — is unprecedented and unsustainable, and US Treasury officials have made efforts in 2003 and early 2004 to gently lower the value of the dollar in relation to other currencies. However, if the dollar is devalued too much, other nations (including China and Japan) may decide to cease investing their savings in American stocks and Treasury securities; this in turn could trigger a dollar collapse. In short, the global monetary system that has maintained relative stability for the past several decades appears to be fraying. Just when the nations of the world need to invest heavily in renewable energy systems, efficiency measures, and sustainable agricultural production in order to deal with problems previously mentioned, investment capital may disappear altogether in a global financial crisis.²
- **International political instability:** The recent declaration by the US that it has a right to preemptive war, and its use of that “right” as a rationale for its invasion of Iraq, could potentially plunge international affairs into a new era of lawlessness. Henceforth, an attack by any nation on any other could be justifiable as self-protection against imagined future threats. Meanwhile, the development and proliferation of new space-based, electronic, genetic, and micro-nuclear weapons opens

the possibility for ever deadlier forms of warfare, of which some have the potential to wipe out entire ethnic populations or to render whole continents uninhabitable.

These problems are related to one another in complex, often mutually reinforcing ways. Taken together, they constitute the most severe challenge our species has ever faced. They represent not merely a likely culmination of human history; in their ongoing and potential environmental impacts, they also may collectively signal one of the most momentous events in all of geological time.

This confluence of unprecedented achievements and threats — which most of us have learned to take for granted as being the ordinary state of affairs for humanity — is overwhelming when one contemplates it *in toto*, as if seeing from above. But usually we see it only one bit at a time, and we prefer *not* to think about how the parts may combine into one terrible whole.



Everyone knows the classic scene from a dozen Westerns: a self-reliant, grizzled geezer is taken to see a doctor, perhaps for the first time in his life. He knows the prognosis intuitively and is prepared for the worst. “Tell me the truth, Doc.”

That’s how some of us feel when we read about climate change or the ongoing degradation of the world’s coral reefs. *Give it to me straight: I’d rather know than live in denial.*

But most of the leaders of government and industry feel differently. They are more like the character Colonel Jessup, played by Jack Nicholson, in *A Few Good Men* (1992). In that film’s climactic courtroom scene, Lieutenant Kaffee (Tom Cruise), cross-examining Jessup, insists, “I want the truth.” Jessup shouts back, “You can’t handle the truth!”

Nor, it seems, can we — at least not in the estimation of the masters of the corporate media. And so we tend to receive only sanitized versions of the news about our world. Occasionally, disturbing information does appear on television or in the newspapers, but the

offending story usually shows up buried in the same broadcast, or on the same page, as others about relatively ephemeral political developments, local murders, the lives of entertainment stars, or scores in sports games.

A recent example: on May 15, 2003, nearly every newspaper in the world headlined the disturbing results of a study published that day in the prestigious British science journal, *Nature*. In their article titled “Rapid worldwide depletion of predatory fish communities,” Ransom A. Myers and Boris Worm had reported, “Our analysis suggests that the global ocean has lost more than 90 percent of large predatory fishes.” Most of this depletion is attributable to the fishing industry. In many species, when populations are reduced beyond a certain point, recovery becomes impossible. Many fish species appear to be beyond, at, or close to that point of no return. With this news story, the world human community was effectively put on notice that the oceans may be dying.

That same day, other newspaper headlines included: “Menem Pulls Out of Argentina Race,” and “Israeli Forces Kill Five in Gaza Raid.” Argentinean politics and the ongoing Israeli occupation of Palestine certainly deserved whatever coverage they got that day, but how was the average reader to weigh the relative importance of the three news items? In the following days there were more headlines about the Argentinean elections, and about further violence in occupied Palestine. But the story about the oceans largely vanished from view, and it is likely that only a tiny percentage of the population understood its importance enough to go out of their way to seek out follow-up items during the following weeks and months. Most people likely did not notice, for example, an article by Richard Sadler and Geoffrey Lean titled “Fish Stocks and Sea Bird Numbers Plummet as Soaring Water Temperatures Kill Off Vital Plankton,” published on October 19th of the same year in the British newspaper, *The Independent*. As a result of global warming, “the North Sea is undergoing ‘ecological meltdown,’” the authors reported, according to startling new research. Scientists say that they are witnessing “a collapse in the system,” with devastating implications for fisheries and

wildlife. Record sea temperatures are killing off the plankton on which all life in the sea depends, because they underpin the entire marine food chain. Fish stocks and sea bird populations have slumped.³

On the day it was published, this story was generally drowned out by “Pope Beatifies Mother Teresa,” and “Blair Back at Work after Heartbeat Scare.” Perhaps the folks in charge are right: maybe we *can't* handle the truth (though it's nice to be given the chance). Most of us do seem to enjoy our pleasant illusions, after all.

We get plenty of help in this regard from the relentlessly cheery entertainment industry, but also from politicians of every stripe. Trying to tell the public truly awful news is considered impolite — unless it is news about something that can be blamed on an opposing political group or some foreign enemy. While leftists sometimes highlight certain ecological crises as a way of blaming corporations and right-wing governments, they often make sure to frame their complaints in a way that suggests that the problems can be solved by implementing a plan being put forward by liberal politicians or NGOs. Meanwhile, commentators on the political right revile “environmental alarmists” for allegedly exaggerating the seriousness of ecological dilemmas to suit their own ideological purposes.

So, as leftists make skewed and half-hearted attempts to discuss ecological crises, the attacks from the right have their intended chilling effect. Mainstream environmentalists these days often tend reflexively to pull their punches and temper their warnings. There are serious problems facing us, they say again and again, but if we just make the right choices those problems will painlessly vanish. When they are at their most baleful, environmental scientists tell us that we have the current decade in which to make fundamental changes; if we don't, then the slide into ecological ruin will be irreversible. On the first Earth Day we were told we had the decade of the 1970s in which to change course; but for the most part we didn't. Then we had the '80s . . . ditto. During the 1992 Earth Summit in Rio we heard that humanity had the '90s to reform itself; after that, there might be no turning back. There was still no fundamental change in direction, and here we are a dozen years on. I expect

any day now to read an official pronouncement to the effect that we have the remainder of the first decade of the new century in which to make changes, *or else*. How many warnings do we get? Isn't it reasonable by now to assume that we are living on borrowed time?

The environmentalists' timidity about saying that we are past the expiration date on facile hope is understandable. No one wants to be viewed as Chicken Little. In *The Population Bomb* (1968), biologist Paul Ehrlich wrote that it was then already too late: "In the 1970s the world will undergo famines — hundreds of millions of people are going to starve to death in spite of any crash programs embarked upon now." Throughout the book, he made other specific — and, in retrospect, very unwise — forecasts. Of course, the Great Famine of the 1970s never happened. To be sure, millions of people starved during that decade, but not in a dramatic enough way to justify Ehrlich's Jeremiad. Ever since then, whenever an environmentalist releases a new time-stamped warning, some commentator chirps, "We've heard it before: those prophecies of doom are always wrong. Why should we listen now?" Most environmentalists are scientists, and scientists are accustomed to couching their assertions in cautious terms anyway. Add to this the Chicken Little factor, and one can hardly blame them for shying away from plain talk about the inevitable consequences of our present pattern of existence.

In his immediate predictions, Ehrlich was indeed mistaken. But in principle he was undeniably correct: if we don't voluntarily reverse human population growth, nature will do it for us.

During the past three decades, industrial civilization has managed to pull a rabbit out of a hat: food production mostly stayed ahead of population growth. We *seemed* to have dodged the bullet. But now, instead of the 3.5 billion humans who were around when *The Population Bomb* was published, we are 6.4 billion — a far larger target — and our ability to duck and weave is quickly waning. World per-capita grain production is falling and ecosystems are failing. Still, today almost no one talks about the need for population reduction in the courageous and straightforward way that Ehrlich did back in the late 1960s. No, we've learned to be more cautious

and nuanced in our comments about the coming demographic holocaust.



I cannot help but write precisely the kind of book that I myself would want to read. And I am one of those grizzled geezers who would rather know the truth, however alarming it may be. I can only trust that there will be others similarly inclined.

For the past couple of decades I have been a full-time independent information worker — a journalist, editor, newsletter publisher, researcher, and college professor. Though I teach a course in human ecology, I have no formal specialty: I am a generalist. My goal is simply to gain an accurate overview of what is happening in the world. In order to do this, I have had to learn how to prioritize information. I have developed the habit of asking, *what is the most important thing to know in order to understand this situation?* This effort to prioritize has led me to realize the crucial role of energy in ecosystems and human societies, and of fossil fuels in modern industrial societies. And this realization in turn led me to write my recent book, *The Party's Over: Oil, War and the Fate of Industrial Societies*. There, I recounted how the Industrial Revolution grew out of our increasing use of fossil fuels — first coal, then oil. I described the 20th century as the Petroleum Century, a one-time special event in human history. During this spectacular period, total global commercial energy production increased by about 9 times, and efficiency gains doubled that figure in terms of utilized energy, yielding an overall 18-fold rise in energy available to human beings. It was this energy windfall that enabled us to transform our way of life from oxcarts and Pony Express messengers to jetliners and cell phones. Meanwhile the human population quadrupled during the “century of progress” to take advantage of its unprecedented energy subsidy.

This was only the prologue to my real message, which was a pointed warning. We have always known in theory that fossil fuels are non-renewable, and are therefore finite in quantity. Now signs are appearing that the rate of global oil extraction may peak and

begin to subside *within the next few years* as a result of geological conditions that cannot be altered by any expected technical advances in exploration or recovery. The consequences are likely to be calamitous. (Many of the most important ideas in *The Party's Over* are summarized and updated in Chapter 1.)



By this time the reader has likely surmised that the purpose of this book is not to provide yet another cheerful manual on how to save the (human) world (as we know it). But neither is it my goal to helplessly bemoan our inevitable collective fate. Rather, it is to explore realistically our options for the next century. When I say “realistically,” I mean that I take as my starting point the belief — arrived at reluctantly after years of reflection and study — that we have already advanced so far in certain directions as to have foreclosed possibilities that we would all prefer were available.

I take it as a given that we have already overshot Earth’s long-term carrying capacity for humans — and have drawn down essential resources — to such an extent that some form of societal collapse is now inevitable. I intend the word “collapse” in a somewhat technical sense that is borrowed from the work of Joseph Tainter, author of *The Collapse of Complex Societies*.⁴ Tainter defines “collapse” as a substantial reduction in social complexity. This can occur either relatively quickly and chaotically, or in a more gradual and managed fashion. In the best case, this would amount to a planned contraction, in which population levels and per-capita resource usage would be scaled back dramatically over decades.

But of course the word *collapse* is fraught with dire implications. Many of us tend to think of a civilization’s collapse as being sudden and complete, but this has usually not tended to be the case in past instances — ancient Rome, Minoan Crete, the Western Chou Empire, and the like. Collapses of historical societies have usually occurred over a period of 100 to more than 500 years. Also, collapse may or may not result in the destruction of a society’s primary institutions. Often it is difficult to pinpoint the exact moment of the

commencement of collapse, and the process may be clearly underway only decades after the society in question has reached its pinnacle of extent and achievement (we will examine the process of collapse in more detail in Chapter 5).

In the present instance, we are already seeing the first phases of collapse, as signaled by the disruption of global climate, the decline of oceanic ecosystems, energy resource depletion, and the peaking of per-capita global grain production; however, it is unlikely that anyone now alive will see the end of the process. From a sufficiently distant temporal perspective, future historians will likely view the period from roughly 1800 to 2000 as the growth phase of industrial civilization, and the period from 2000 to 2100 or 2200 as its contraction or collapse phase.

Even if a reversal of growth is inevitable, the form it will take is as yet unclear, and will be determined by the actions of the present generation. We have weapons and other technological means to end human life forever. We also have the knowledge and skills necessary to build small-scale, decentralized, sustainable communities capable of providing a high level of human satisfaction and cultural attainment while degrading the environment to only a relatively minor extent over time.

THIS IS HOW I FEEL SOMETIMES

Imagine yourself in the following circumstance: You have just awakened from sleep to find yourself on a tarpaper raft floating away from shore. With you on the raft are a couple of hundred people, most of whom seem completely oblivious to their situation. They are drinking beer, barbecuing ribs, fishing, or sleeping. You look at the rickety vessel and say to yourself, "My God, this thing is going to sink any second!"

Miraculously, seconds go by and it is still afloat. You look around to see who's in charge. The only people you can find who appear to have any authority are some pompous-looking characters

operating a gambling casino in the middle of the raft. In back of them stand heavily armed soldiers. You point out that the raft appears dangerous. They inform you that it is the safest and most wonderful vessel ever constructed, and that if you persist in suggesting otherwise the guards will exercise their brand of persuasion on you. You back away, smiling, and move to the edge of the raft. At this point, you're convinced (and even comment to a stranger next to you) that, with those idiots at the helm, the raft can't last more than another minute or so.

A minute goes by and still the damn thing is afloat. You turn your gaze out to the water. You notice now that the raft is surrounded by many sound-looking canoes, each carrying a family of indigenous fishers. Men on the raft are systematically forcing people out of the canoes and onto the raft at gunpoint, and shooting holes in the bottoms of the canoes. This is clearly insane behavior: the canoes are the only possible sources of escape or rescue if the raft goes down, and taking more people on board the already overcrowded raft is gradually bringing its deck even with the water line. You reckon that there must now be four hundred souls aboard. At this rate, the raft is sure to capsize in a matter of seconds.

A few seconds elapse. You can see and feel water lapping at your shoes, but amazingly enough the raft itself is still afloat, and nearly everyone is still busy eating, drinking, or gambling (indeed, the activity around the casino has heated up considerably). You hear someone in the distance shouting about how the raft is about to sink. You rush in the direction of the voice only to see its source being tossed unceremoniously overboard. You decide to keep quiet, but think silently to yourself, "Jeez, this thing *can't* last more than another couple of minutes! What the hell should I do?"

You notice a group of a dozen or so people working to patch and reinforce one corner of the raft. This, at least, is constructive behavior, so you join in. But it's not long before you realize that the only materials available to do the patching with are ones cannibalized from elsewhere on the raft. Even though the people you're working with clearly have the best of intentions and are making

some noticeable improvements to the few square feet on which they've worked, there is simply no way they can render the entire vessel "sustainable," given its size, the amount of time required, and the limited availability of basic materials. You think to yourself that there must be some better solution, but can't quite focus on one.

As you stand there fretting, a couple of minutes pass. You realize that every one of your predictions about the fate of the raft has been disconfirmed. You feel useless and silly. You are about to make the only rational deductions — that there must be some mystical power keeping the raft afloat, and that you might as well make the most of the situation and have some barbecue — when a thought comes to you: The "sustainability" crowd has the right idea . . . except that, as they rebuild their corner of the raft, they should make it easily detachable, so that when the boat as a whole sinks they can simply disengage from it and paddle toward shore. But then, what about the hundreds of people who won't be able to fit onto this smaller, reconditioned raftlet?

You notice now that there is a group of rafters grappling with the soldiers who've been shooting holes in canoes. Maybe, if some of the canoes and their indigenous occupants survive, then the scope of the impending tragedy can be reduced. But direct confrontation with the soldiers appears to be a dangerous business, since many of the protesters are being shot or thrown into the water.

You continue working with the sustainability group, since they seem to have the best understanding of the problem and the best chances of survival. At the same time, your sympathies are with the protesters and the fisher families. You hope and pray that this is all some nightmare from which you will soon awaken, or that there is some means of escape — for everyone — that you haven't seen yet.

My goal in writing this book is to provide readers with information that will help them understand the constraints and opportunities of our unique moment in time, so that they can help themselves and the rest of humanity weather the century ahead.



The book begins with an overview of oil and natural gas depletion and their likely impacts — a summary and updating of the information in *The Party's Over*. This updated material includes startling information about the current natural gas supply in North America, and the likely geopolitical consequences of attempts by the US to deal with the problem by importing liquefied natural gas from overseas.

In the next four chapters, we explore the four principal options available to industrial societies during the next few decades:

- **Last One Standing — The path of competition for remaining resources.** If the leadership of the US continues with current policies, the next decades will be filled with war, economic crises, and environmental catastrophe. Resource depletion and population pressure are about to catch up with us, and no one is prepared. The political elites, especially in the US, are incapable of dealing with the situation. Their preferred “solution” is simply to comander other nations’ resources, using military force.
- **Powerdown — The path of cooperation, conservation, and sharing.** The only realistic alternative to resource competition is a strategy that will require tremendous effort and economic sacrifice in order to reduce per-capita resource usage in wealthy countries, develop alternative energy sources, distribute resources more equitably, and humanely but systematically reduce the size of the human population over time. The world’s environmental, anti-war, anti-globalization, and human rights organizations are pushing for a mild version of this alternative, but for political reasons they tend to de-emphasize the level of effort required, and to play down the population issue.
- **Waiting for a Magic Elixir — Wishful thinking, false hopes, and denial.** Most of us would like to see still another possibility — a painless transition in which market forces

come to the rescue, making government intervention in the economy unnecessary. I discuss why this rosy hope is extremely unrealistic, and serves primarily as a distraction from the hard work that will be required in order to avert violent competition and catastrophic collapse.

- **Building Lifeboats — The path of community solidarity and preservation.** This fourth and final option begins with the assumption that industrial civilization cannot be salvaged in anything like its present form, and that we are even now living through the early stages of disintegration. If this is so, it makes sense for at least some of us to devote our energies toward preserving the most worthwhile cultural achievements of the past few centuries.

In the final chapter, “Our Choice,” I explore how three important groups within global society — the decision-making elites of government, finance, and industry; the opposition to the elites, including the anti-war and anti-globalization movements — the “other superpower”; and ordinary people — are likely to choose among these four options. I suggest that the most fruitful response is likely to be a combination of Powerdown (in its most vigorous form) and Lifeboat Building. This chapter ends with a plea for the conservation of our highest human values and ideals during what is likely to be the most challenging century of all our history.

I believe that attempting to maintain business as usual during the coming decades will merely ensure catastrophic collapse. However, we *can* preserve the best of what we have achieved, while at the same time easing our way as peacefully and equitably as possible back down the steep ramp of increasing scale and complexity our society has been climbing for the past couple of centuries. These are the options we face, and the sooner we acknowledge that this is the case and choose wisely, the better off we and our descendants will be.