Chapter 5

The Stolen Future

Because our economy and political traditions are more real to us than the biosphere itself, the ecological revolution we need is not likely to take place until climate change itself becomes much more persuasive, until the biosphere tells us in unmistakable terms that it will truly decimate us if we don't change. At that point we will finally understand what it requires of us and will modify our societies in ways still possible for us. The fact that a damaged biosphere will eventually coerce us into action tells us that we face a basic choice: either we carry out an ecological revolution today in a manner that conserves what we know best—or climate change will devastate our society later on and force us to adapt to conditions we did not choose. Here again, our situation is unprecedented: the necessary ecological revolution, however inconvenient, is the product of a forced choice, a decision to prevent a later, much more intrusive and chaotic event.

If we do act too late, it won't be for the first time. Many observers would point out that in this respect, the ecological crisis of our day parallels many others we have already experienced. Hunters on the American high plains decimated millions of buffalo and nearly eradicated the species without much of a public outcry; only a few small herds remained after the great slaughter. Developed nations injected DDT into the food chain long enough for that molecule to drive some species to near extinction before Rachel Carson's call to action finally led to a ban on the product in the United States. In the 1970s, trawlers on the high seas wiped out a substantial share of desirable fish populations by the time nations finally took action. We could add almost indefinitely to this list, each item of which would demonstrate very clearly that in countless cases, we act *after* the damage has been done.

This time around, however, acting too late will be even worse, thanks to yet another strange aspect of our present dilemma. Because the carbon dioxide we emit today will endure in the atmosphere for over a century, and our actions today will have consequences over generations, a failure to act will perpetually undermine and possibly erase any *future* action to address climate change. Modern history is rife with revolutions that led to counter-revolutions, movements to restore the prior state of things. Today, our own inaction would constitute a *perpetual* counter-revolution, a heavy hand destroying the inventiveness of future generations. It's as if the minutemen of the future would endlessly be defeated by King George III, no matter how resourcefully they fought on.

If that is so, we are simultaneously harming the future of the biosphere *and deliberately stealing from future humanity's ability to respond effectively to that fact*. Our emissions are not only harming the biosphere; they are destroying the *future history* of humanity and the biosphere both. Carbon dioxide, it turns out, is not only a molecule that can persist well into the future, contributing to global warming for generations; it is also a *historical* pollutant, fogging up the future with past events, smothering potential brilliance with the stupidity of earlier generations. It's as if our own moment, by some strange wrinkle in time, will come *after* the generation that follows us. The more carbon dioxide we emit, the more contempt we show for the agency of our own descendants. In giving birth to them and raising them, we may to some degree be showing them love and care, but at the same time we hand down to them an inheritance of future disaster, a legacy of the ashes to come.

Our situation is thus utterly bizarre. We have no real clue how to act in time, yet our inaction will severely restrict the benefit of action when it finally does take place. The revolution is not only going to come too late; when it comes, *it will be defeated in advance*. Thanks to us, it will be far less effective than it should be, *even when it does come*. We are the thieves of the future.

Faced with this haunting realization, we might be inclined to pause and listen to a viewpoint steeped in a cynical acceptance of human folly and ecological destruction. Some people might remark, for example, that our present inaction is nothing to lament. In their view, if we act against our own long-term self-interest we will bear the consequences, as we so

often have in the past. Nothing in human affairs guarantees wisdom or foresight; our failure to act in the present case is no exception. What is there to regret? After all, they might go on to argue, the value we give to the natural world is not intrinsic within it; it speaks of what we as human beings enjoy and love. Nature itself has no consciousness of harm; it will not protest if we destroy it. In wounding nature, we only wound what we project onto it and no more—unless we harm ourselves, in which case we will ultimately learn our lesson and apply it as well as we can. There is no need for anyone to try to speak for the biosphere; what happens to it matters only insofar as it bears on humankind in a manner evident to all.

This attitude cannot withstand a quick reality check. Do we really believe that the world's ecosystems exist only for us—simply because we possess a certain kind of consciousness? If so, we value the power to know above the power to exist. Yet in one account of our formation as human beings, our ability to know results from God's creating us in his image, in which case we are responsible for preserving his creation. In another, that ability came about through our evolution within specific ecosystems, in competition with other species and in response to many environmental pressures; it links us directly to thousands of other forms of life. In either version, we owe whatever ability we have to something outside ourselves.

Moreover, our ability to "know" is limited; we have mastered very little about our own existence, much less about the lives of other creatures, and even less about their possible forms of consciousness. Rather than making us the sole arbiter of value, this ability speaks of a fallible echo of divine powers or emerges from a particular mode of evolutionary adaptation. Human consciousness is remarkable, to be sure, but it is not a feature that gives us unlimited sovereignty to do what we wish with the biosphere. Few of us, I dare say, would accept existence merely as forms of consciousness without the pleasures of embodied life. We would not wish to sacrifice our existence as natural beings and become purely mental entities. But in that case, we are natural creatures among the rest, and our wish to live well reflects the basic drive of all life to do the same. If we respect these dimensions of human existence, we must respect other forms of life as well and do what we can not to destroy them.

Nevertheless, this objection does have one great merit: it makes explicit the profound anthropocentrism on which all our institutions are

based. That attitude, as I have argued, is quite visible in our economic systems, which take for granted that ecosystems are "natural resources" for human beings to use. It is inherent in our political traditions as well, which find it difficult to take a perspective other than the human into account. In fact, it speaks for nearly every dimension of modern, industrial society, which everywhere takes human sovereignty for granted.

Climate change refutes that attitude, and it refutes it for good. Because we regard nature merely as the backdrop for human activities and continue to live as we please, we threaten the conditions of life as we know it and thus undermine modern society itself. We are in the process of demonstrating, once and for all, that without a flourishing biosphere, human life on its own cannot flourish in the least.

But if that is so, climate change tells us that much more is amiss than climate change alone. It is only one consequence of a broad array of anthropocentric activities, each of which threatens the biosphere. From an ecological perspective, we have already intruded into countless landscapes to make space for our own activities, spewed pollutants into innumerable ecosystems on land and sea, and driven a vast number of species to extinction. In the last three or four decades, we have begun to take steps to curb these practices, but we have far to go.

All these problems, including climate change, arise from the enormous increase of productive power that came with advanced industrialization. Drawing on the energy provided by fossil fuels, industry could produce goods more cheaply and abundantly than ever before and generate chemical fertilizers that allowed modern agriculture to be much more productive. Together, the industry and agriculture powered in this fashion sustained a much greater population. That population, with its highly developed way of life, now expects a similar standard of living in the future, as do in some measure the people living in the developing world. Although advanced societies are getting better at producing goods and services with less energy each passing year, providing an advanced standard of living for all the world's people would still require using far more resources than are available on this planet. There is not even the shadow of a chance that the developed way of life under existing energy technology can be shared with all or even most of the world's people.

Nevertheless, in these and many other ways, we continue to treat the biosphere as if it is an inexhaustible resource for human beings.

How much would we change this situation if we managed to convert to entirely renewable sources of energy? It's worth trying another thought experiment: suppose that we *did* decide to do whatever we could to change our energy economy as soon as possible. What would follow? David MacKay's book on what it would take to energize the island of Britain (England, Scotland, and Wales) without emitting any greenhouse gases provides an excellent starting point. Late in his book, MacKay provides several different ways to achieve that goal, leaving the choice to the reader. One scenario relies heavily on nuclear power; others use clean coal; still others avoid both of those sources and rely heavily on wind power. When he puts a representative plan on the map of the island, the real implications of such a shift become clear. Major swaths of the countryside are converted into biofuel or wood-generating systems; eleven nuclear power plants spring up around the nation; several wave and tide farms appear off the coasts; waste incinerators appear all over the map near populated areas; wind farms arise in likely locations around the island's periphery; large quantities of energy from solar power, derived from installations located in the Sahara Desert, arrive through long-distance power lines; and a few clean coal mines appear as well.[95]

MacKay's exemplary work applies indirectly to any other densely populated nation or region, including a good portion of the United States. If we starkly reduce our use of fossil fuels, we will have to intrude into our environment in other ways. We'll need to install wind turbines wherever there is enough wind to justify the expense, put in thousands of square miles of solar panels in sun-friendly locations, gather the energy of wave and tide wherever feasible, harvest every bit of the energy of plants and trees we can on a sustainable basis, and much more. In short, we'll need to exploit the Earth in every way we can imagine *except* by emitting the exhaust from fossil fuels into the atmosphere. Ironically, taking our lesson to heart and trying to ward off climate change would force us to shift our exploitation of the Earth's systems from one mode to another, causing us to *increase* our imprint on the visible surface of the land and sea by a good margin.

This thought experiment suggests that our energy-dependent large populations require so much energy we cannot supply them without a huge imprint on the planet of some kind. We now borrow from the previous history of life by burning fossilized creatures—in the form of oil, coal, or gas. We mine uranium, refine it, and use its radiative energy in nuclear power stations, but that process leaves behind nuclear waste, whose half-life is on the scale of thousands of years. It seems we must either colonize the planet's past or its future. If we wish to avoid these options, we could set up millions of energy farms on land and sea to extract the energy of sun, wind, and wave, of grasslands and forests. But doing so will inevitably intrude into all those ecosystems in ways we do not yet fully understand. How much of the deserts of the Southwest do we wish to cover in solar panels if we respect the ecosystems there? What happens to the Earth's dynamic flows if we harvest a good share of the movement of wind and tide for our benefit? In effect, we would end up colonizing the Earth's *present* in a style that would be novel even for us.

One innovation might be an exception to this pattern: we could try to capture and store carbon dioxide underground. In that case, we would appropriate relatively hidden and unused parts of the Earth, though we'd have to make sure that the stored gas would not escape someday far into the future and do its damage then. Outside this single instance, it seems that our sheer numbers make it necessary to colonize the Earth, and time itself, for our own benefit.

The simple fact is that if we look at the present situation from a non-anthropocentric viewpoint, there are too many of us. If we wished to avoid sucking up the resources of the planet on this scale, we would have to reduce our population by a serious fraction—perhaps to preindustrial levels. *The single greatest legacy of the era of unlimited growth is very close to home: it is us*. No doubt the rate of population increase in industrialized nations has greatly declined over the past few decades. But that fact does not cancel out the reality that the process of modernization since the mid-eighteenth century has made possible a staggering increase in human lives. We have by now far surpassed what William R. Catton, Jr., described several generations ago as the planet's "carrying capacity," the number of people that the Earth's ecosystems could credibly support.[96] The fact that modern agriculture can feed the billions only by

using immense quantities of fossil fuel, overusing the available water, and befouling the groundwater and seas with the effluent of nitrogen fertilizers tells us that under sustainable methods it would be much more difficult to keep us all alive. Like climate change, we ourselves are symptoms of an immense excess that has been going on for generations.

If that is so, then we, too, live in a future created by a particular past. We did not choose to exist in these numbers; we are in our own bodies the heirs of decisions not our own. Furthermore, the very fact of our presence in these numbers is a huge constraint on our action today. Much as we are stealing the future from our descendants, our own present actions are seriously undercut by the actions of our ancestors.

But it hardly works to suggest that in retrospect, we would repudiate their decisions—for if we did so, we'd be choosing not to exist. We're caught in a tragic contradiction between our own love of life and an awareness of what that life costs the biosphere. We are the agents of a new future and a danger to it at the same time. This contradiction appears as well in our relation to the modern, industrial era: we are grateful for past revolutions, happy to have been liberated in more ways than we can remember, amazed at the abundance of knowledge and enjoyment that have been made available to us. Whatever we may say, we are inevitably the products of the modern world. But we also know that this world is killing the biosphere and cannot continue. The modern way of life *is* our life, our own breath and blood, yet if we stick with it, we will destroy the Earth.

Insofar as our dilemma comes from our sheer numbers, we cannot help but realize that *our future, too, has been stolen from us*. We already overtax the Earth, whatever we do. Even now, the revolution is far past its time. From an ecological perspective, that event should have taken place long ago—simultaneous with the adoption of large quantities of fossil fuels to power the modern economy. In liberating us from an ancient scarcity, the coming of cheap fossil fuels also set into motion the ecological destruction to which we must now respond. Our task is thus in part to bring about a transformation that is long overdue. Yet in doing so we cannot denounce our ancestors; they could not have known the ultimate consequences of their actions. They stole the future from us without meaning to do so in the least. We are immersed in an immense historical

irony, whereby the actions of our ancestors, meant to liberate us, have without their intention also cursed us.

It is no wonder, then, that we find it so difficult to face the current crisis. Inheritors of a vast abundance, and in our vast numbers an instance of that abundance, we cannot easily undo the legacy of generations. In the previous chapter I listed a series of reasons why the ecological revolution of our time has gone missing. Here I can add a further reason to that list: in the end, that revolution asks us to undo certain consequences of a demographic explosion that has lasted for several centuries. It demands that we catch up with an event that should have happened long ago—and that, thanks to our ignorance, could not happen at its proper time. We were born too late and are emerging from our stupidity later yet. We are only beginning to grasp our situation now, at this far edge of time, awakening as it were after our own end.

Where are we, then, in this strange moment on this planet, which is not quite, or not yet, our real home? As I argued in the previous chapter, this hour cries out for a revolution—but one that promises us no familiar liberation, no release. We must act, yet we will not; we must reply to something greater than we are, yet we can barely hear its voice. Now, when we work within our political traditions, they thwart our actions, rather than enabling them. In doing what we must, we discover that we are also asked to give what we do not have. The measures we could take to forestall the coming horror are relatively simple, their purpose clear, yet enacting them seems impossibly difficult.

Yet as I have been suggesting in this chapter, if we did so, we would discover that despite our best efforts, we would still be using the planet for our own purposes. Even as we attempt to forestall the coming crisis, we must recognize that we ourselves, in our great numbers and excessive demands, are already a crisis too great for the planet to bear. We are lost where we are found, ignorant in our knowledge, poor in our wealth, inheriting a blessing that curses us. Here at the crossroads, we are already beyond them, already inhabiting a future we did not choose. Stealing the future from our descendants, we also discover that in some degree ours is missing as well. In retrospect, we might conclude that the whole history of the modern world is shadowed by another future that is not to be—one promised by an ecological revolution that, whenever it takes place,

will come too late. We are the heirs, in short, of a tragic contradiction, an impasse no one chose. The challenge of our time is not only to fight against this impasse, to bring about that necessary, impossible revolution; it is also to discover how to live in a world with a disappearing future. To this last, devastating challenge, we now turn.

Notes

95. For the five energy plans, see MacKay, *Sustainable Energy*, 203–213; for the map illustrating one plan, see 215.

96. William R. Catton, Jr., *Overshoot: The Ecological Basis of Revolutionary Change* (Urbana: University of Illinois Press, 1982).