

## Chapter 6

### Do We Consume Too Much?

A cartoon by Roz Chast in the *New Yorker* depicts two monk-like figures on a street, each carrying a sign. One sign reads: “The End of the World Is at Hand for Religious Reasons.” The sign carried by the other declares, “The End of the World Is at Hand for Ecological Reasons.” In a recent issue of *Conservation Biology*, David Orr observed “an interesting convergence of views between conservation biologists and religious fundamentalists” because “both agree that things are going to hell in the proverbial handbasket.” Yet conservationists and religious fundamentalists (to use Orr’s appellation) do not agree entirely. It is only the conservation biologists, at least those Orr identifies, who believe that the end is near. They describe today’s booming global economy as Armageddon – as a “hike through the Book of Revelation.”<sup>1</sup>

Many environmentalists believe that the world has entered the “Last Days” or that the Apocalypse looms because they subscribe to the Malthusian theory that as population and consumption increase, resources inevitably diminish and become exhausted.<sup>2</sup> Conservation biologists declare that “whether by climate change, biotic impoverishment, catastrophic pollution, resource wars, emergent diseases, or a combination of several, the end is in sight, although we can quibble about the details and the schedule.”<sup>3</sup>

For many decades, these environmentalists have repeated the warning that “human demand is outstripping what nature can supply – even though the great majority of human beings have not even approached the extraordinary American level of resource consumption.” They deplore the “human overshoot of the Earth’s carrying capacity.”<sup>4</sup>

Christians, however, do not generally believe the end is near but that we have an opportunity as well as a responsibility to care for Creation.<sup>5</sup> While environmentalists speak in terms of catastrophe and

collapse – they engage in the rhetoric of survival – Christians continue to emphasize redemption and renewal. In 2005, Richard Cizik, then leader of the 30-million-member National Association of Evangelicals, told the *New York Times*, “There’s a certain gloom and doom about environmentalists. They tend to prophecies of doom that don’t happen.”<sup>6</sup>

## OVERCONSUMPTION – ETHICS OR ECONOMICS?

Do we consume too much? To some, the answer is self-evident. If there is only so much food, timber, petroleum, and other material to go around, the more we consume, the less must be available for others. The global economy cannot grow indefinitely on a finite planet. As populations increase and economies expand, natural resources must be depleted; prices will rise, and humanity – especially the poor and future generations at all income levels – will suffer.<sup>7</sup>

Other reasons to suppose we consume too much are less often stated though also widely believed. Of these the simplest – a lesson we learn from our parents and from literature since the Old Testament – may be the best: although we must satisfy basic needs, a good life is not one devoted to amassing material possessions; what we own comes to own us, keeping us from fulfilling commitments that give meaning to life, such as those to family, friends, and faith. The appreciation of nature also deepens our lives. As we consume more, however, we are more likely to transform the natural world, so that less of it will remain for us to learn from, communicate with, and appreciate.

During the nineteenth century preservationists forthrightly gave ethical and spiritual reasons for protecting the natural world. John Muir condemned the “temple destroyers, devotees of ravaging commercialism” who “instead of lifting their eyes to the God of the mountains, lift them to the Almighty dollar.”<sup>8</sup> This was not a call for better cost-benefit analysis: Muir described nature not as a commodity but as a companion. Nature is sacred, Muir held, whether or not resources are scarce.

Philosophers such as Emerson and Thoreau thought of nature as full of divinity. Walt Whitman celebrated a leaf of grass as no less than the journeywork of the stars: “After you have exhausted what there is in business, politics, conviviality, love, and so on,” he wrote in *Specimen Days*, and “found that none of these finally satisfy, or permanently wear – what remains? Nature remains.”<sup>9</sup> These writers thought of nature as a refuge from economic activity, not as a resource for it.

Today many biologists say we are running out of resources and they seek to “price” services ecosystems provide. Predictions of resource scarcity appear objective and scientific, whereas pronouncements that nature is sacred or has intrinsic value can appear embarrassing in a secular society. One might suppose, moreover, that prudential and economic arguments may succeed better than moral or spiritual ones in swaying public policy. This is especially true if the warnings of resource depletion, global famine, and plummeting standards of living are dire enough – and if many scientists vouch for them.

In the 1970s, prominent scientists saw mankind’s relationship to the environment as a zero-sum game; they wrote that anything people did – to build houses, schools, or hospitals, to farm, to create new plants and animals, indeed, even to cure disease – was bad for nature, bad for the environment, and thus bad for humanity. The Back Bay in Boston, the Foggy Bottom in Washington, D.C., and hundreds of other masterpieces of architectural design and urban living – virtually anywhere humanity can live decently – has required such actions as the filling of malarial swamps, the clearing of woods, or the damming of rivers – all examples of the degradation of nature. If humanity is defined as distinct from and apart from the natural world, logically every human action disrupts and degrades it. In 1993, a group of fifty-eight of the world’s scientific academies issued a statement arguing that humanity and the natural environment are necessarily on a collision course. According to this statement, “Environmental degradation has primarily been a product of our efforts to secure improved standards of food, clothing, shelter, comfort, and recreation for growing numbers of people.”<sup>10</sup>

“In an agricultural or technological society,” two scientists said in a much-cited article in 1971, “each human has a negative impact on his environment.”<sup>11</sup> Progress in knowledge or technology, these authors wrote, had already exhausted the possibility of economies of scale with respect to most resources. Because of the growth of population and affluence, “we are on the diminishing returns part of the most important curves.”<sup>12</sup>

Predictions of resource depletion, food scarcity, and falling standards of living, however, may work against our moral principles and intuitions. Consider the responsibility many of us feel to improve the lot of those less fortunate than we. By declaring consumption a zero-sum game, by insisting that what feeds one mouth is taken from another, environmentalists may offer a counsel of despair. Must we abandon the hope that those who are now poor can enjoy better standards of living?

Indeed, the Malthusian proposition that the Earth's population already overwhelms the planet's carrying capacity – an idea associated for forty years with mainstream environmentalist thought – may make us feel guilty but strangely relieves us of responsibility. If there are *too many people* some must go. Why not them?<sup>13</sup>

A different approach, which is consistent with our spiritual commitment to preserve nature and with our moral responsibility to help each other, rejects the apocalyptic narrative of environmentalism. The alternative approach suggests not so much that we consume less but that we invest more. Environmentalists could push for investment in technologies that increase productivity per unit of energy, get more economic output from less material input, recycle waste, provide new sources of power, replace transportation in large part with telecommunication, and move from an industrial to a service economy. Technological advances of these kinds account for the remarkable improvements in living conditions most people in the world have experienced in the last decades – and this was the period over which environmentalists had predicted the steepest declines. They also account for the preservation of nature – for example, the remarkable reforestation of the eastern United States. We have a great distance still to go – but the pockets of oppression and destitution that persist do not prove the impossibility of further progress.

### BUST OR BOOM?

In the 1970s, a group of intellectuals, primarily biologists, supported the Malthusian view that humanity had already exceeded the carrying capacity of the Earth. In 1970, Paul Ehrlich predicted that global food shortages would cause 4 billion people to starve to death between 1980 and 1989, 65 million of them in the United States. In *The End of Affluence* (1974), Paul and Anne Ehrlich wrote that “before 1985 mankind will enter a genuine age of scarcity in which many things besides energy will be in short supply.” Crucial materials would near depletion during the 1980s, the Ehrlichs predicted, pushing prices out of reach. “Starvation among people will be accompanied by starvation of industries for the materials they require.”<sup>14</sup>

These ideas created great excitement – a bandwagon effect – at the time. Ehrlich himself appeared about twenty times on the Johnny Carson show. In a best-selling 1972 study, *The Limits to Growth*, the Club of Rome predicted that the world would effectively run out of gold by

1981, mercury by 1985, tin by 1987, zinc by 1990, petroleum by 1992, and copper, lead, and natural gas by 1993, occasioning drastic price increases.<sup>15</sup> Similar warnings, representing what may have been the scientific consensus of the time, poured forth in widely read studies, including *Small Is Beautiful* (1971), the *Global 2000 Report* (1980), and the annual *State of the World* reports by Lester Brown and the Worldwatch Institute. Apocalyptic pronouncements brought celebrity, prizes, grants, and honors. The direr the prophecy, the higher the lecture fee. Skeptics or “contrarians” were shunned.

The authors of some of these studies have released new books with the same message. Paul Ehrlich’s *One with Nineveh* (2004) repeats the warning, according to *Booklist*, that “an escalating human population places ultimately unsustainable demands on the natural resources necessary for survival.”<sup>16</sup> Gus Speth, chief author of *Global 2000*, issues the jeremiad in a new version, *Red Sky in the Morning* (2004). In *Limits to Growth: The 30-Year Update* (2004), the Club of Rome team renews its warning “that if a profound correction is not made soon, a crash of some sort is certain. And it will occur within the lifetimes of many who are alive today.”<sup>17</sup> In *Plan B: Rescuing a Planet under Stress* (2003), Lester Brown reiterates that “our claims on the earth have become excessive.” Unlike the first editions, these “updates” are not best sellers. The environmental best seller at the time was Michael Crichton’s *State of Fear*, a diatribe *against* environmentalism. The book describes an Orwellian dystopia that environmentalists create by converting the pursuit of science into the quest for power. These environmental leaders maintain a regime of terror by branding any kind of intellectual honesty, much less dissent, as a betrayal of science and reason.

Why have the “updates” of the warnings of the 1970s not sold as well? The predictions proved far off base. Indeed, researchers had long questioned the apocalyptic narrative. The World Resources Institute, in a 1994–1995 report, referred to “the frequently expressed concern that high levels of consumption will lead to resource depletion and to physical shortages that might limit growth or development opportunity.” Examining the evidence, however, the institute said that “the world is not yet running out of most nonrenewable resources and is not likely to, at least in the next few decades.”<sup>18</sup> A 1988 report from the Office of Technology Assessment concluded, “The nation’s future has probably never been less constrained by the cost of natural resources.”<sup>19</sup> Advancing technology and increasing wealth, far from destroying the planet,

helped to clean up the air and water – in the United States to the lowest levels of pollution ever recorded.<sup>20</sup>

Far from vindicating the environmental narrative of inevitable decline and collapse, the last fifty or sixty years have seen a remarkable improvement in standards of living except in those areas, particularly in Africa, in which oppression, corruption, and civil war deprive people of the blessings of technological advance and global prosperity.<sup>21</sup> According to an authoritative report, “Global economic activity increased nearly sevenfold between 1950 and 2000. Despite the population growth . . . average income per person almost doubled during this period.”<sup>22</sup> The same report notes that Malthusian fears about global food shortages are unfounded. It notes that

our ability to provide sufficient food and to do so in increasingly cost-effective ways has been a major human and humanitarian achievement. It is all the more remarkable given that the past 50 years have seen the global population double, adding more mouths to be fed than existed on the planet in 1950. And according to most projections, it appears likely that growing food needs can be met in the foreseeable future.<sup>23</sup>

At the world level, life expectancy at birth has risen from about thirty years a century ago to forty-seven in 1950, fifty-eight in 1975, and sixty-five years today; it is expected to increase to seventy-four years by 2045.<sup>24</sup> Access to clean potable water has also improved globally over the past fifty years although – as with food and longevity – many people lack adequate access to water in nations locked in civil war and plagued with poverty, corruption, and oppression.<sup>25</sup>

The apocalyptic narrative is logically irrefutable – as is any prophecy that is easily postponed. The better things get, the worse they shall become. (In a later chapter, I draw an analogy between today’s environmental jeremiads and those issued by seventeenth-century Puritan preachers who railed against the “sweetening” of life in New England and warned of the wrath to come.) The concept of “overshoot” explains away or accommodates any amount of progress – making the apocalyptic prophecy immune to empirical evidence. Paul Ehrlich, when he lost his famous bet with Julian Simon about the price of a basket of minerals (which declined over a decade), dismissed the results. “The bet doesn’t mean anything. Julian Simon is like the guy who jumps off the Empire State Building and says how great things are going so far as he passes the 10th floor,” Ehrlich said.<sup>26</sup>

The idea that increased consumption will inevitably lead to depletion and scarcity, as often as it is repeated, is mistaken both in principle and in fact. It is based on five misconceptions. The first is that we are running out of nonrenewable resources, such as minerals. The second is that the world will run out of renewable resources, such as food. The third contends that energy resources will soon run out. The fourth misconception argues from the “doubling time” of world population to the conclusion that human bodies will bury the Earth. The fifth misconception supposes the wealthy North exploits the impoverished South. These misconceptions could turn into self-fulfilling prophecies if we believed them – and if we therefore failed to make the kinds of investments and reforms that have improved standards of living in most of the world.

#### ARE WE RUNNING OUT OF NONRENEWABLE RESOURCES?

While commodity markets are volatile – with petroleum especially sensitive to political conditions – the prices of minerals generally declined between 1980 and the terrorist attack on September 11, 2001. From 1980 to 1990, for example, the prices of resource-based commodities declined (the price of rubber by 40 percent, cement by 40 percent, and coal by almost 50 percent), while reserves of most raw materials increased.<sup>27</sup> They increased because technologies greatly improved exploration and extraction – for example, the use of bacteria to leach metals from low-grade ores. Reserves of resources “are actually functions of technology,” one analyst has written. “The more advanced the technology, the more reserves become known and recoverable.”<sup>28</sup>

If price is the measure of scarcity, then metals and minerals, with the exception of the politically driven vagaries of petroleum markets, have become more plentiful over the past decades. According to a 2004 World Bank report, the price of its index of minerals and metals (in 1990 dollars) fell from a high close to \$160 in 1965 to a low of about \$80 – a decline of 50 percent – in 2001.<sup>29</sup> One reason for this persistent decline is that plentiful resources are quickly substituted for those that become scarce and the price of which therefore rises. Analysts speak of an Age of Substitutability and point, for example, to nanotubes, tiny cylinders of carbon whose molecular structure forms fibers a hundred times as strong as steel, at one-sixth the weight.<sup>30</sup> As technologies that use more-abundant resources do the work of those dependent on less-abundant ones – for example, ceramics in place of tungsten, fiber optics in place of



copper wire, aluminum cans in place of tin ones – the demand for and the price of scarce resources decline.

One can easily find prior instances of substitution. During the early nineteenth century whale oil was the preferred fuel for household illumination.<sup>31</sup> A dwindling supply prompted innovations in the lighting industry, including the invention of gas and kerosene lamps and Edison's carbon-filament electric bulb.<sup>32</sup> Whale oil has substitutes, such as electricity and petroleum-based lubricants. Whales are irreplaceable.

The more we learn about materials, the more efficiently we use them. The progress from candles to carbon-filament to tungsten incandescent lamps, for example, decreased the energy required for and the cost of a unit of household lighting by many times. Compact fluorescent lights are four times as efficient as today's incandescent bulbs and last ten to twenty times as long.<sup>33</sup> Comparable energy savings are available in other appliances: refrigerators sold in 1993 were 23 percent more efficient than those sold in 1990 and 65 percent more efficient than those sold in 1980, saving consumers billions in electric bills.<sup>34</sup> Robert Solow, a Nobel laureate, says that if the future is like the past, "there will be prolonged and substantial reductions in natural-resource requirements per unit of real output." He asks, "Why shouldn't the productivity of most natural resources rise more or less steadily through time, like the productivity of labor?"<sup>35</sup>

Amory Lovins, the director of the Rocky Mountain Institute, has described a new generation of ultralight automobiles that could deliver the safety and muscle of today's cars but with far better mileage – four times as much in prototypes and ten times as much in projected models.<sup>36</sup> Since in today's cars only 15 to 20 percent of the fuel's energy reaches the wheels (the rest is lost in the engine and the transmission), and since materials lighter and stronger than steel are available or on the way, no expert questions the feasibility of the high-mileage vehicles Lovins describes.

Computers and cameras are examples of consumer goods getting lighter and smaller as they get better. It is said that some "singing" chips on birthday cards contain more computing power than the massive 1976 Cray supercomputer, which the United States tried to keep out of the hands of the Soviets.<sup>37</sup> Improvements that extend the useful life of objects also save resources. Platinum spark plugs in today's cars last for 100,000 miles, as do "fill-for-life" transmission fluids. On average, cars bought in 1993 have a useful life more than 40 percent longer than those bought in 1970.<sup>38</sup>



A World Resources Institute study measured the “materials intensity” of our economy – that is, “the total material input and the hidden or indirect material flows, including deliberate landscape alterations,” required for each dollar of economic output. “The result shows a clearly declining pattern of materials intensity, supporting the conclusion that economic activity is growing somewhat more rapidly than natural resource use.”<sup>39</sup> The Organization for Economic Cooperation and Development, an association of the world’s industrialized nations, has proposed that its members strive as a long-range goal to decrease their materials intensity by a factor of ten.<sup>40</sup> This is feasible as the world converts from a resource-intensive industrial to an information-driven service economy.<sup>41</sup>

Communication illustrates the trend toward lighter, smaller, less materials-intensive technology. Just as telegraph cables replaced frigates in transmitting messages across the Atlantic and carried more information faster, glass fibers and microwaves have replaced cables – each new technology using less materials but providing greater capacity for sending and receiving information. Areas not yet wired for telephones are expected to leapfrog directly into cellular communications.<sup>42</sup>

Peter Drucker and other management experts argue that any modern economy depends more on the progress of technology than on the exploitation of nature. Although raw materials will always be necessary, knowledge has become the essential factor in the production of goods and services. Of course, no one believes that economic growth – or technological and scientific progress – will automatically lead to environmental improvement. It only provides the means; we must gather the moral, cultural, and political will to pursue the end.<sup>43</sup> “Where there is effective management,” Drucker has written, “that is, application of knowledge to knowledge, we can always obtain the other resources.”<sup>44</sup> In other words, the limits to knowledge are the limits to growth.

### WILL THERE BE ENOUGH FOOD?

A prominent agricultural economist, Gale Johnson, wrote in 2000, “People today have more adequate nutrition than ever before and acquire that nutrition at the lowest cost in all human history, while the world has more people than ever before – not by a little but by a lot.”<sup>45</sup> This happened, he argued, because “we have found low-cost and abundant substitutes for natural resources important in the production process.”<sup>46</sup> The price of food and feed grains, in real dollars (adjusted for inflation) has declined by half from what it was fifty years ago in international

markets.<sup>47</sup> Contrary to the apocalyptic narrative invoked by many environmentalists,<sup>48</sup> at the global level “soil loss and degradation are not likely to represent a serious constraint on agricultural production.” Agronomist Vernon Ruttan notes, “Water and wind erosion estimates are measures of the amount of soil moved from one place to another rather than the soil actually lost.”<sup>49</sup>

From 1961 to 1994 global production of food doubled.<sup>50</sup> “The generation of farmers on the land in 1950 was the first in history to double the production of food,” the Worldwatch Institute reported. “By 1984, they had outstripped population growth enough to raise per capita grain output an unprecedented 40 percent.”<sup>51</sup> From a two-year period ending in 1981 to a two-year period ending in 1990 the real prices of basic foods fell 38 percent on world markets, according to a 1992 United Nations report.<sup>52</sup> In the developing world, the production of food outpaced population growth, almost tripling between 1948–1952 and 1994–1996.<sup>53</sup> In spite of growing populations and increasing average incomes, since 1950, the “real price of food commodities has decreased by 75 percent.”<sup>54</sup>

The world produces enough cereals and oilseeds to feed a healthful vegetarian diet adequate in protein and calories to 10 billion people – a billion more than the number at which demographers predict world population will peak later this century.<sup>55</sup> If, however, the idea is to feed 10 billion people not healthful vegetarian diets but the kind of meat-laden, artery-clogging, obesity-causing gluttonous meals that many Americans eat, the production of grains and oilseeds may have to triple – primarily to feed livestock.<sup>56</sup> If that is the goal, the trends are auspicious. Conceivably, if everyone had the money to pay for food at current prices, the world could produce enough beef and donuts to fatten everyone for the slaughter of diabetes, cirrhosis, and heart disease.

Farmers worldwide could double the acreage in production, but this should not be necessary. Increasing productivity will flow from the “agricultural revolution driven by biotechnology – a field that we define as including advanced genetics and genomics, bioinformatics, genetically modified plants, and tissue culture.”<sup>57</sup> The Worldwatch Institute points out that “there are vast opportunities for increasing water efficiency” in arid regions, ranging from installing better water-delivery systems to planting drought-resistant crops.<sup>58</sup> “Scientists can help push back the physical frontiers of cropping by developing varieties that are more drought resistant, salt tolerant, and early maturing. The payoff on the first two could be particularly high.”<sup>59</sup> Biotechnology introduces “an entirely new stage in humankind’s attempts to produce more crops and

plants.”<sup>60</sup> The Gene Revolution takes over where the Green Revolution left off.<sup>61</sup>

Before we all head to Morton’s to tuck into a double filet mignon, sauce béarnaise – followed quickly by postprandial stupor and a triple-bypass – we should acknowledge three problems for this optimistic account. First, the essential input to agriculture is money. Money is not spread evenly over the Earth; it is concentrated in the wealthier nations. According to the *Millennium Ecosystem Assessment*, “Despite rising food production and falling food prices, more than 850 million people still suffer today from chronic undernourishment.”<sup>62</sup> Many of the poorest countries, such as Chad and Congo, possess more than enough excellent agricultural land but lack social organization and investment. Institutional reform – responsible government, peace, the functioning of markets, the provision of educational and health services – in other words, development, is the appropriate response to poverty and therefore malnutrition.<sup>63</sup>

Second, the question of how much land will be used to produce combustibles rather than comestibles – fuel rather than food – is a matter for speculation. As things stand, U.S. government subsidies paid for ethanol, which is produced largely from maize, have boosted production from about 175 million gallons in 1980 to 3.9 billion gallons in 2005. As of 2006, the United States had the capacity to produce 5.4 billion gallons per year of corn-based ethanol; if subsidies remain in place, another 6 billion gallons of capacity already under construction will come online in 2008.<sup>64</sup> The economics are complex, indeed bewildering. Ethanol is more cheaply and efficiently produced from cane than from maize; it is less expensive to bring by ship to New York from canefields in Brazil than by truck from cornfields in Kansas. (To produce and deliver corn-based ethanol often requires the use of a nearly equivalent amount of energy from fossil-based fuels.)<sup>65</sup> The government now pays huge subsidies to cotton farmers, thus closing our markets to cotton produced in less developed countries. If the government paid these farmers to produce cane instead of cotton (the same land is often suitable to both) this might be a sensible (and therefore probably a politically impossible) strategy to improve the well-being of developing countries with cotton to sell and to make the United States more energy self-sufficient.

In 2005, the U.S. Department of Agriculture (USDA) found that switchgrass and other cellulosic crops coupled with genetically engineered microbes to process them could provide a far less expensive and less energy-intensive feedstock than maize for biofuels. The same report

concluded that available farm, forest, and pasture land, while still meeting demand at current prices for food, feed, and export commodities, potentially could yield additionally more than 1.3 billion dry tons per year of biomass, enough to displace more than 30 percent of the nation's current consumption of petroleum.<sup>66</sup> No one can say at this time, however, where the economy and technology of biofuels are headed.

Third, as the *Assessment* observes, "Among industrial countries, and increasingly among developing ones, diet-related risks, mainly associated with overnutrition, in combination with physical inactivity now account for one third of the burden of disease."<sup>67</sup> (By comparison, "worldwide, undernutrition accounted for nearly 10% of the global burden of disease.")<sup>68</sup> To make 9 billion people obese, biotech-based agriculture would have to convert the Earth to a feedlot for human beings. Farmers can now provide a healthful diet for that many people on less acreage than they use today – thus sparing land for nature.<sup>69</sup> In other words, we can spare nature by sparing ourselves.<sup>70</sup>

By locking themselves into the Malthusian rhetoric – by predicting impending worldwide starvation and using the plight of the very poor as evidence of it – environmentalists ignore and even alienate groups who emphasize the quality and safety rather than the abundance of food and who understand that undernutrition represents a local rather than a global problem. The discussion has moved from the question of whether the Earth sets "limits" to the question of how to get wealthy people to eat less and poor people to eat more.<sup>71</sup> Animal rights advocates deplore horrific animal feedlot operations and related factory-farm methods required to overfeed people. Environmentalists have obvious allies in advocates of human development, public health, and animal rights. To have any credibility, however, environmentalists must lose the apocalyptic narrative.

### ARE WE RUNNING OUT OF ENERGY?

Probably the most persistent worries about resource scarcity concern energy. "The supply of fuels and other natural resources is becoming the limiting factor constraining the rate of economic growth," a group of experts proclaimed in 1986. They predicted the exhaustion of domestic oil and gas supplies by 2020 and, within a few decades, "major energy shortages as well as food shortages in the world."<sup>72</sup>

In the past few years (as of this writing) a cornucopia of studies has been published with titles like "*Beyond Oil: The View from Hubbert's Peak*;"

*"The End of Oil: On the Edge of a Perilous New World;" "Out of Gas: The End of the Age of Oil;" and "The Party's Over: Oil, War and the Fate of Industrial Societies."*<sup>73</sup> These books generally work with the current guesstimate that 2 trillion barrels of oil – enough to last eighty years – exist in the ground and could be recovered at something like today's prices.<sup>74</sup> As oil expert Daniel Yergin has written, "fears that the world is running out of oil . . . have recurred since as far back as the 1880s. But global output has actually increased by 60 percent since the 1970s, the last time the world was supposedly running out of oil."<sup>75</sup> The supply of oil is determined by a plethora of market as well as political forces – for example, how much firms invest in discovering new fields, recovering more oil from old ones, and increasing refining capacity.<sup>76</sup> In view of the price changes that can be expected to reduce demand and improve incentives to deliver supply, Yergin summarizes, "the image of the 'peak' should give way to the 'plateau,' – a plateau that, given what is known today, is still several decades away."<sup>77</sup>

The fossil or carbon-based fuel that is most abundant is coal, and some of the largest reserves of it are found in the United States. These will last for more than a century. In this respect, no global shortages of hydrocarbon fuels are in sight. "One sees no immediate danger of 'running out' of energy in a global sense," writes John P. Holdren, a professor at Harvard University. He concludes that "running out of energy resources in any global sense is not what the energy problem is all about."<sup>78</sup>

Holdren is correct. The real energy problem is twofold. First, the burning of hydrocarbon fuels contributes to the threat of global warming and climate change. In 1958, the concentration of carbon dioxide (CO<sub>2</sub>) stood at 315 parts per million (ppm). Today, it has reached 380ppm, which is about one-third higher than the historical norm over 400,000 years. Levels of CO<sub>2</sub> are increasing fast enough that in four or five decades, unless something is done, concentrations will be twice as great as historic levels.<sup>79</sup> Since the planetary climate is apparently already changing in response to current CO<sub>2</sub> loadings, many scientists consider the situation urgent. The global energy problem has less to do with depleting resources than with controlling emissions. The narrative of resource depletion and energy starvation that dominated the environmental rhetoric of the 1970s and 1980s has not prepared us well to seize the opportunities, including clean-coal technology and nuclear energy, available or under development to reduce or limit the release of "green-house" gases.

*New York Times* columnist Thomas L. Friedman has argued that the only way to bring energy efficiency and clean energy production down to prices that China and other developing countries can afford “is by mobilizing free-market capitalism.” As a result, environmentalists must cease to identify the enemy as economic growth and as the capitalism that underlies it. According to Friedman, “To a degree, the market is already at work on this project – because some venture capitalists and companies understand that clean-tech is going to be the next great global industry.”<sup>80</sup> Rather than thinking in terms of “cutting back,” Friedman argues, we must envision “a new cornucopia of abundance for the next generation by inventing a whole new industry.”<sup>81</sup>

The second problem has to do with geopolitical stability, in other words, world peace. Friedman observes that oil-rich states tend to be the least democratic – and the wealthier the ruling class gets, the more tyrannical, truculent, obstructive, and dangerous it becomes.<sup>82</sup> The petrocra-  
cies destabilize global balances of power while holding oil-dependent states hostage. The deeper problem lies in the possible overreaction or hysteria of politicians in the United States who – incited by fears of running out of oil or of competing for it with China and other developing countries – will engage in military misadventures, confrontations, and hostilities, alienating the rest of the world and undoubtedly fulfilling their own awful prophecies.

While the food problem is best understood as local – giving the very poor access to nutrition – the energy problem is global. The principal concern is not the supply of energy but whether nations, especially the United States, indulge themselves in disastrous quick-fixes, such as trade wars or invasions, or whether they make the long-term investments in technology and efficiency that can make everyone better off while responding (as well as adapting) to climate change.

Although leading environmentalists have focused on scarcity issues, they also join nearly everyone else in deploring the effects of the consumption of carbon-based fuels on the political as well as atmospheric climate. In an essay I described in the first chapter, Michael Shellenberger and Ted Nordhaus have argued that the environmental community while bemoaning these problems has offered virtually no solutions for them.<sup>83</sup> Is this because we environmentalists cannot bring ourselves to accept the possibility that markets can be creative, that competition can lead to innovation? Are we wedded to the rhetoric of the zero-sum game?

When oil prices spiked in the early 1970s as a result of the Arab embargo imposed in response to U.S. foreign policy the economy adjusted. From 1973 to 1986, energy consumption in the United States remained virtually flat while economic production grew by almost 40 percent. Compared with Germany or Japan, this was a poor showing.<sup>84</sup> The Japanese, who tax fuel more heavily than do Americans, use only half as much energy as the United States per unit of economic output. (Japanese environmental regulations are also generally stricter; if anything, this improves the competitiveness of Japanese industry.) The United States wastes hundreds of billions of dollars annually in energy inefficiency. By becoming as energy efficient as Japan, the United States could expand its economy and become more competitive internationally.<sup>85</sup>

To provide leadership and direction – rather than simply reiterate their apocalyptic projections – environmentalists should advocate investment in some mix of power-producing climate-sparing technologies. There is a smorgasbord of suggestions. Mark Jaccard argues that the use of coal – of which there are ample reserves – can be made “sustainable” through the application of gasification techniques that capture and sequester carbon while yielding cleaner forms of energy such as electricity and synthetic fuels. He contends this can be done economically.<sup>86</sup> Amory Lovins, among others, has described commercially available technologies that can “support present or greatly expanded worldwide economic activity while stabilizing global climate – and saving money.” He observes that “even very large expansions in population and industrial activity need not be energy-constrained.”<sup>87</sup>

Lovins and other experts contend that pollution-free energy from largely untapped sources is available in amounts exceeding our needs.<sup>88</sup> Geothermal energy – which makes use of heat from the Earth’s core – is theoretically accessible through drilling technology in the United States in amounts thousands of times as great as the amount of energy contained in domestic coal reserves. Tidal energy is also promising.<sup>89</sup> Analysts who study solar power may agree with Lester Brown that “technologies are ready to begin building a world energy system largely powered by solar resources.”<sup>90</sup> In the future these and other renewable energy sources may be harnessed to the nation’s system of delivering electricity. Joseph Romm and Charles Curtis have described advances in photovoltaic cells (which convert sunlight into electricity), fuel cells (which convert the hydrogen in fuels directly to electricity and heat, producing virtually no pollution), and wind power. According to these



authors, genetically engineered organisms used to ferment organic matter could, with further research and development, bring down the costs of ethanol and other environmentally friendly “biofuels” to make them competitive with gasoline.<sup>91</sup>

If many opportunities exist for saving energy and curtailing pollution, why have we not seized them? One reason is that low fossil-fuel prices remove incentives for fuel efficiency and for moving to other energy sources. This may change. Another reason is that government subsidies for fossil fuels have amounted to many billions of dollars a year since the 1980s, whereas support for alternatives has dwindled. As prices for petroleum increase, the prospect of progress becomes more plausible. “At heart, the major obstacles standing in the way [of a clean-energy economy] are not technical in nature,” the energy consultant Michael Brower has written, “but concern the laws, regulations, incentives, public attitudes, and other factors that make up the energy market.”<sup>92</sup>

#### ARE THERE TOO MANY PEOPLE?

In the 1970s, the population crisis was easy to define and dramatize. The Malthusian logic of exponential growth or “doubling times,” so forcefully presented in books such as *The Population Bomb* (1968) and *The Population Explosion* (1990), proved that the “battle to feed all of humanity is over,” and analogized the spread of population with cancer. “A cancer is an uncontrolled multiplication of cells; the population explosion is an uncontrolled multiplication of people. . . . The [surgical] operation will demand many apparently brutal and heartless decisions. The pain may be intense. But the disease is so far advanced that only with radical surgery does the patient have a chance of survival.”<sup>93</sup>

By emphasizing the exponential mathematics of population growth – as if people were cancerous cells whose reproductive freedom had to be controlled by radical surgery – environmentalists made four mistakes. First, they missed the opportunity to endorse the belief that people should have all – but only – the children they want. The goal of assisting parents worldwide to plan for their children might appeal to “family values” and thus to social conservatives in a way that concerns about “too many people” did not. Efforts to improve the status of women – a key factor in fertility – may enjoy more political support and may be more effective than conventional fertility-control policies.

Second, by inveighing against economic growth – by demanding a small economy for a small Earth – environmentalists alienated potential

allies in the development community. Leading environmentalists explicitly rejected “the hope that development can greatly increase the size of the economic pie and pull many more people out of poverty.” This hope expresses “basically a humane idea,” Paul Ehrlich wrote, “made insane by the constraints nature places on human activity.”<sup>94</sup>

Development economists replied that a no-economic-growth approach in the developing world “will deprive entire populations of access to better living conditions and lead to even more deforestation and land degradation.”<sup>95</sup> Amartya Sen among other scholars pointed out that insistence on the Malthusian belief that nature puts narrow constraints on human activity diverts attention from the real causes of malnutrition, namely, poverty and political powerlessness. The Malthusian approach, Sen has argued, leads to complacent optimism because food production at the global level is more than adequate. With such “misleading variables as food output per unit of population, the Malthusian approach profoundly misspecifies the problems facing the poor of the world,” which have to do with local conditions not with global constraints. “It is often overlooked that what may be called ‘Malthusian optimism’ has actually killed millions of people.”<sup>96</sup>

Third, by invoking “doubling times” as if that concept could be as meaningfully applied to people as to tumors, environmentalists ignored science and reason, that is, everything demographers knew about the transition then under way to a stable global population. As people move to cities – where children are not needed to do agricultural labor – and as they are assured their children will survive (so they can have fewer), and as the status of women improves, families become smaller. World population growth, which resulted from lower mortality not higher fertility, had been decelerating since the 1950s and dramatically after the 1970s. The United Nations now predicts the global population (the “medium variant” projection) to stabilize at 2050 at 9.1 billion and to peak at 9.2 billion in 2075.<sup>97</sup> Most demographers believe that population will stop increasing during this century and then decline slowly to perhaps 8.4 billion in 2100.<sup>98</sup>

In almost all developed countries today fertility has fallen below 2.1 births and is expected to decline. European women have on average 1.4 births. According to the Population Reference Bureau, as of 2002, fertility fell “below replacement level in 33 less developed countries – mostly in Latin America and the Caribbean and parts of Asia – and is declining steeply in many others.”<sup>99</sup> Most people live “in countries or regions in which fertility is below the level of long-run replacement.”<sup>100</sup>

Fourth, the environmental community has yet to respond to the principal moral problem that confronts population policy – one that involves longevity not fertility.<sup>101</sup> The number of people sixty years or over will increase from 606 million in 2000 to nearly 1.9 billion by 2050. According to a United Nations report, “By 2050, the number of older persons (60 years and older) in the world will exceed the number of young (under the age of 15) for the first time in history.”<sup>102</sup> In several countries, such as Japan, people sixty-five years of age and older already are more numerous than those under fifteen; by 2030, residents sixty-five years and over will outnumber those under fifteen in nearly every developed country – and by a 2:1 ratio in Japan and several European nations. In those countries by 2030 the median age will be fifty-two and grandparents will outnumber grandchildren under eighteen years of age.

Anyone interested in “doubling times” or “exponential growth” may consider the following statistics. Between 1950 and 2000, the number of people sixty years of age and older on the planet tripled; by mid-century, it will triple again to almost 2 billion older persons.<sup>103</sup> In industrialized countries the number of centenarians has doubled every decade since 1950. The UN reports, “The growth rate of those 60 or older will reach 2.8 percent annually in 2025–2030.” According to the Population Reference Bureau, “The number of Chinese ages 65 and older is projected to swell from 88 million in 2000 to 199 million in 2025 – and to 349 million in 2050.” In many countries, those eighty or over (the “elderly”) constitute the fastest-growing segment of the population. In 1900, 374,000 people in the United States had attained the age of eighty; today, 10 million Americans are elderly; by 2030, that number is expected nearly to double, making huge demands on younger workers, whose labor may be needed and incomes taxed to pay for their care.

Environmentalists confront population growth with an entrance strategy, that is, birth control. Bill McKibben’s *Maybe One: A Case for Smaller Families* (1999) now sets the pace. Even with one child per couple, however, world population will continue to increase if families reach four, five, or more generations. Environmentalists need to develop an exit strategy. A book with the title *Maybe Eighty: A Case for Shorter Life-Spans* could provide one approach to the question environmentalists must confront.

The problem is no longer Malthus – it’s Methuselah. What do environmentalists say about this? Oddly the writers of the 1960s and 1970s in the updated versions of their original studies – published thirty to forty years later – say little. As long as environmental leaders argue there are

“too many people” without suggesting how long a life should last, they seem self-serving. They appear to comprise a vast and growing gerontocracy outraged that younger people whom they may need to take care of them presume to bring their own babies into their world.

### DOES THE NORTH EXPLOIT THE SOUTH?

William Reilly, when he served as head of the Environmental Protection Agency in the administration of Bush the elder, encountered a persistent criticism at international meetings on the environment. “The problem for the world’s environment is your consumption, not our population,” delegates from the developing world told him. Some of these delegates later took Reilly aside. “The North buys too little from the South,” they confided. “The real problem is too little demand for our exports.”<sup>104</sup>

The delegates who told Reilly that the North consumes too little of what the South produces have a point. “With a few exceptions (notably petroleum),” a report from the World Resources Institute observes, “most of the natural resources consumed in the United States are from domestic sources.”<sup>105</sup> Throughout the later decades of the twentieth century, the United States and Canada were the world’s leading exporters of raw materials.<sup>106</sup> The United States consistently leads the world in farm exports, running huge agricultural trade surpluses. The share of raw materials used in the North that it buys from the South recently stood at a thirty-year low; industrialized nations trade largely among themselves.<sup>107</sup> The World Resources Institute reported that “the United States is largely self-sufficient in natural resources.” Again, excepting petroleum “and a few other industrial minerals, its material flows are almost entirely internal.”<sup>108</sup>

Subsidies paid to American farmers add to our budgetary deficits and national debt while making it impossible for producers in developing countries to build their own economies in peaceable ways. According to one reliable estimate, the cost of these subsidies to American consumers and taxpayers “has totalled over \$1.7 trillion. The harm to agricultural producers abroad, including many developing countries, does not help U.S. foreign policy.”<sup>109</sup> Because of enormous farm subsidies, now defended in the name of energy security or environmental responsibility, the production of corn in the United States reached 10.7 billion bushels in 2006, the second highest yield ever recorded.<sup>110</sup> Much of this product will be pushed on foreign markets or converted into ethanol

that could be less expensively imported from sugarcane fields in Brazil and other tropical countries.

Sugar provides an instructive example of how the North excludes – rather than exploits – the resources of the South. Since 1796 the United States has protected domestic sugarcane against imports.<sup>111</sup> American sugar growers, in part as a reward for large contributions to political campaigns, have long enjoyed a system of quotas and prohibitive tariffs against foreign competition.<sup>112</sup> American consumers paid about three times world prices for sugar in the 1980s, enriching a small cartel of U.S. growers. *Forbes* magazine has estimated that a single family, the Fanjuls, of Palm Beach, reaps more than \$65 million a year as a result of quotas for sugar.<sup>113</sup>

The sugar industry in Florida, which is larger than in any other state, makes even less sense environmentally than economically.<sup>114</sup> It depends on a publicly built system of canals, levees, and pumping stations. Fertilizer from the sugarcane fields chokes the Everglades. Sugar growers, under a special exemption from labor laws, import Caribbean laborers to do the grueling and poorly paid work of cutting cane.<sup>115</sup>

As the United States tightened sugar quotas (imports fell from 6.2 to 1.5 million tons annually from 1977 to 1987), the Dominican Republic and other nations with ideal environments for growing cane experienced political turmoil and economic collapse. Many farmers in Latin America, however, did well by switching from sugar to coca, which is processed into cocaine – perhaps the only high-value imported crop for which the United States is not developing a domestic substitute.<sup>116</sup> By importing cane, if in the form of ethanol, the United States could do more than its foreign policy has achieved in stabilizing many societies in the Southern Hemisphere.

Before the Second World War the United States bought 40 percent of its vegetable oils from developing countries. After the war the United States protected its oilseed markets – for example, by establishing price supports for soybeans.<sup>117</sup> Today the United States is a leading exporter of oilseeds, although until recently it imported palm and coconut oils to obtain laurate, an ingredient in soap, shampoo, and detergents. Even this form of “exploitation” may cease. In 1994 farmers in Georgia planted the first commercial crop of a high-laurate canola, genetically engineered by Calgene, a biotechnology firm.<sup>118</sup>

About 100,000 Kenyans make a living on small plots of land growing pyrethrum flowers, the source of a comparatively environmentally safe insecticide of which the United States has been the largest importer.

The U.S. Department of Commerce, however, awarded \$1.2 million to a biotechnology firm to engineer pyrethrum genetically. Industrial countries will synthesize pyrethrum and undersell Kenyan farmers.<sup>119</sup>

An article in *Foreign Policy* observed that the biotechnological innovations that create “substitutes for everything from vanilla to cocoa and coffee threaten to eliminate the livelihood of millions of Third World agricultural workers.”<sup>120</sup> Vanilla cultured in laboratories costs a fifth as much as vanilla extracted from beans, and thus jeopardizes the livelihood of tens of thousands of vanilla farmers in Madagascar.<sup>121</sup> In the past, farms produced agricultural commodities and factories processed them. In the future, factories may “grow” as well as process many of the most valuable commodities – or the two functions will become one. As one plant scientist has said, “We have to stop thinking of these things as plant cells, and start thinking of them as new microorganisms, with all the potential that implies” – for example, that cells could be made to grow in commercially feasible quantities in laboratories in the North, not fields in the South.<sup>122</sup>

The North not only balks at buying sugar and other crops from developing countries; it also dumps its excess agricultural commodities, especially grain, on them. After the Second World War, American farmers, using price supports left over from the New Deal, produced vast wheat surpluses, which the United States exported at concessionary prices to Europe and then the Third World. These enormous transfers of cereals to the South, institutionalized during the 1950s and 1960s by U.S. food aid, continued during the 1970s and 1980s, as the United States and the European Community vied for markets, each subsidizing agricultural exports.<sup>123</sup>

Grain imports from the United States “created food dependence within two decades in countries which had been mostly self-sufficient in food at the end of World War II,” the sociologist Harriet Friedmann has written. Tropical countries soon matched the grain gluts of the North with their own surpluses of cocoa, coffee, tea, bananas, and other commodities. Accordingly, prices for these exports collapsed as early as 1970. The prices of coffee, sugarcane, natural rubber, and cocoa all declined by between 77 and 86 percent between 1980 and 2002.<sup>124</sup> These declines caught developing nations in a scissors. As Friedmann describes it, “One blade was food import dependency. The other blade was declining revenues for traditional exports of tropical crops.”<sup>125</sup>

It might be better for the environment if the North exchanged the crops for which it is ecologically suited – wheat, for example – for crops

easily grown in the South, such as coffee, cocoa, palm oil, and tea. Contrary to common belief, these tropical export crops – which grow on trees and bushes, providing canopy and continuous root structures to protect the soil – are less damaging to the soil than are traditional staples such as cereals and root crops.<sup>126</sup> Better markets for tropical crops could help developing nations to employ their rural populations and to protect their natural resources. Allen Hammond, of the World Resources Institute, points out that “if poor nations cannot export anything else, they will export their misery – in the form of drugs, diseases, terrorism, migration, and environmental degradation.”<sup>127</sup>

Many of the rural poor, according to the environmental consultant Norman Myers, “have no option but to over-exploit environmental resource stocks in order to survive” – for example, by “increasingly encroaching onto tropical forests among other low-potential lands.”<sup>128</sup> Myers observes that the principal agents of tropical deforestation are refugees from civil war and rural poverty, who are forced to eke out a living on marginal lands. According to Myers, slash-and-burn farming by displaced peasants accounts for far more deforestation than all commercial uses of forests combined. Most of the wood from trees harvested in tropical forests – that is, those not cleared for farms – is used locally for fuel. The likeliest path to protecting the rain forest is through economic development that enables peasants to farm efficiently on land better suited to farming than to forest, and to purchase kerosene and other fuels.<sup>129</sup>

These poorest of the poor, Myers has written, “are causing as much natural-resource depletion as the other three billion developing-world people put together.”<sup>130</sup> Peasants who try to scratch a living from an inhospitable environment, according to Myers, “are often the principal cause of deforestation, desertification, and soil erosion” and the “extinction of species.”<sup>131</sup> These people “can be helped primarily by being brought into the mainstream of sustainable development, with all the basic needs benefits that would supply.”<sup>132</sup>

Many environmentalists have argued that economic activity, affluence, and growth automatically lead to resource depletion, environmental deterioration, and ecological collapse. Yet greater productivity and prosperity – which is what economists mean by growth – have become prerequisite for feeding urban populations and protecting sensitive ecological systems such as rain forests. Otherwise, destitute people who are unable to buy food and fuel will create pollution and destroy forests. Without economic growth, which also correlates with lower fertility,



the environmental and population problems of the South will only get worse. For impoverished countries facing environmental disaster, economic growth may be the one thing that is sustainable.

### WHAT IS WRONG WITH CONSUMPTION?

Any of us who attended college in the 1960s and 1970s took pride in how little we owned. We celebrated our freedom when we could fit all our possessions – mostly a stereo – into the back of a Beetle. Decades later, middle-aged and middle-class, many of us have accumulated an appalling amount of stuff. Piled high with gas grills, lawn mowers, excess furniture, bicycles, children's toys, garden implements, lumber, cinder blocks, ladders, lawn and leaf bags stuffed with memorabilia, and boxes yet to be unpacked from the last move, the two-car garages beside our suburban homes are too full to accommodate the SUV. The quantity of resources, particularly energy, we waste and the quantity of trash we throw away (recycling eases our conscience) add to our consternation.

We are distressed by the suffering of others; the erosion of the ties of community, family, and friendship; and the loss of the beauty and spontaneity of the natural world. These concerns reflect the most traditional and fundamental of American religious and cultural values. Even if predictions of resource depletion and ecological collapse are mistaken, it seems that they should be true to punish us for our success and our sins.

Perhaps a feeling of guilt drives environmentalists to adopt their vision of impending Apocalypse, in the form of imminent resource depletion, starvation, and ecological collapse. In contrast, religious communities – especially mainstream Evangelical and other Christian groups – emphasize stewardship toward the Earth for the very long run.<sup>133</sup> In fact, more than forty major Christian groups, including Evangelicals, today pursue missions they describe as environmental conservation or caring for Creation.<sup>134</sup> A recent *New York Times* headline states, “Evangelical Leaders Swing Influence behind Effort to Combat Global Warming.”<sup>135</sup>

If the environmental community joined with mainstream religious groups in preaching a narrative of hope rather than one of futility and imminent demise, the environmental movement would find itself in a better position to work with charitable organizations to relieve the lot of the poorest of the poor. There is a lot of misery worldwide to relieve. As bad as the situation is, however, it is improving, remarkably so in regions where people can be secure in their persons and property,

that is, where they are not victims of crime, war, and corruption. *The Millennium Ecosystem Assessment* summarizes, “The overall global pattern of human well-being, therefore, is one in which aggregate levels are continuing to increase at historical rates, although a large number of individuals appear to be stuck at very low levels of well-being.”<sup>136</sup> It adds, “Nations with lower trade barriers, more open economies, and transparent government processes tend to have higher per capita growth rates.”<sup>137</sup>

The imposition of a market economy on traditional cultures in the name of development – the idea that everyone can and should always produce and consume more – may create problems as well as opportunities. A market economy may dissolve the ties to family, land, community, and place on which indigenous peoples traditionally rely for their security. Thus projects intended to relieve the poverty of indigenous peoples may, by causing the loss of cultural identity, engender the very powerlessness they aim to remedy. Pope Paul VI, in the encyclical *Populorum Progressio* (1967), described the dilemma confronting indigenous peoples: “either to preserve traditional beliefs and structures and reject social progress; or to embrace foreign technology and foreign culture, and reject ancestral traditions with their wealth of humanism.”<sup>138</sup>

The same sort of conundrum confronts wealthy societies. No one has written a better critique of the assault that commerce makes on the quality of our lives than Thoreau provides in *Walden*. We are always in a rush – a “Saint Vitus’ dance,” as he called it.<sup>139</sup> Idleness is suspect. Americans today spend less time with their families, neighbors, and friends than they did in the 1950s. Juliet B. Schor, an economist at Harvard University, argues that “Americans are literally working themselves to death.”<sup>140</sup> A fancy car, video equipment, or a complex computer program can exact a painful cost in the form of maintenance, upgrading, and repair. We are possessed by our possessions; they are often harder to get rid of than to acquire.

That money does not make us happier, once our basic needs are met, is a commonplace overwhelmingly confirmed by sociological evidence. Paul Wachtel, who teaches social psychology at the City University of New York, has concluded that bigger incomes “do not yield an increase in feelings of satisfaction or well-being, at least for populations who are above a poverty or subsistence level.”<sup>141</sup> This cannot be explained simply by the fact that people have to work harder to earn more money: as I mentioned in an earlier chapter, even those who hit jackpots in lotteries often report that their lives are not substantially happier as a

result.<sup>142</sup> Well-being depends on health, membership in a community in which one feels secure, friends, faith, family, love, and virtues that money notoriously cannot buy.

Economists in earlier times predicted that wealth would not matter to people once they attained a comfortable standard of living. “In ease of body and peace of mind, all the different ranks of life are nearly upon a level,” wrote Adam Smith, the eighteenth-century English advocate of the free market.<sup>143</sup> In the 1930s the British economist John Maynard Keynes argued that after a period of expansion, accumulation of wealth would no longer improve personal well-being.<sup>144</sup> Subsequent economists, however, found that even after much of the industrial world had attained the levels of wealth Keynes thought were sufficient, people still wanted more. From this they inferred that wants are insatiable.<sup>145</sup>

Perhaps this is true. But the insatiability of wants poses a difficulty for standard economic theory, which posits that humanity’s single goal is to increase or maximize wealth. If wants increase as fast as income grows, what purpose can wealth serve?<sup>146</sup>

Whether or not economic growth is sustainable, there is little reason to think that once people attain a decent standard of living, continued growth is desirable. Economist Robert H. Nelson wrote that it is no longer possible for most people to believe that economic progress will “solve all the problems of mankind, spiritual as well as material.”<sup>147</sup> Environmentalists will not make convincing arguments as long as they frame the debate over sustainability in terms of the physical limits to growth rather than the moral purposes it may serve. Even if technology overcomes the physical limits nature sets on the amount we can produce and consume, it does not automatically create moral, spiritual, or cultural progress. Environmentalists defeat themselves by denying the power of technology to solve problems of economic scarcity. If the debate were couched not in economic but in moral or social terms – if it centered on the values we may serve rather than the resources we may exhaust – environmentalists might more easily win the argument.

## MAKING A PLACE FOR NATURE

According to Thoreau, “a man’s relation to Nature must come very near to a personal one.”<sup>148</sup> For environmentalists in the tradition of Thoreau and John Muir, stewardship is a form of fellowship; although we must use nature, we do not value it primarily for the economic purposes it serves. We take our bearings from the natural world – our sense of

time from its days and seasons, our sense of place from the character of a landscape and the particular plants and animals native to it. An intimacy with nature ends our isolation in the world. We know where we belong, and we can find the way home.

In defending old-growth forests, wetlands, or species, we make our best arguments when we think of nature chiefly in aesthetic and moral terms.<sup>149</sup> Rather than having the courage of our moral and cultural convictions, however, we too often rely on instrumental arguments for protecting nature, in the process attributing to natural objects more economic value than they have. By imputing to an endangered species an economic value or a price much greater than it fetches in a market, we “save the phenomena” for economic theory but do little for the environment. When environmentalists make the prices come out “right” by imputing market demand to aspects of nature that in fact have moral, spiritual, or aesthetic value, they confuse themselves and fail to convince others.

There is no credible argument that all or even most of the species we are concerned about protecting have any economic significance or that they are essential to the functioning of the ecological systems on which we depend. (If whales went extinct, for example, the seas would not fill up with krill.) David Ehrenfeld, a biologist at Rutgers University, points out that the species most likely to be endangered are those the biosphere is least likely to miss. “Many of these species were never common or ecologically influential; by no stretch of the imagination can we make them out to be vital cogs in the ecological machine.”<sup>150</sup>

Species may be profoundly important for cultural and spiritual reasons, however. Consider the example of the wild salmon, whose habitat is being destroyed by hydroelectric dams along the Columbia River. Although this loss is unimportant to the economy overall (there is no shortage of farmed salmon), it is of the greatest cultural significance to the Amerindian tribes that have traditionally subsisted on wild salmon, and to the region as a whole. By viewing local flora and fauna as a sacred heritage – by recognizing their intrinsic value – we discover who we are rather than what we want. On moral and cultural grounds society might be justified in making economic sacrifices – removing dams, for example – to protect remnant populations of the Snake River sockeye, even if, as critics complain, hundreds or thousands of dollars are spent for every fish.

Even those plants and animals that do not define places possess enormous intrinsic value and are worth preserving for their own sake. What

gives these creatures value lies in their histories, wonderful in themselves, rather than in any use to which they can be put. Biologist E. O. Wilson elegantly takes up this theme: “Every kind of organism has reached this moment in time by threading one needle after another, throwing up brilliant artifices to survive and reproduce against nearly impossible odds.”<sup>151</sup> Every plant or animal evokes not just sympathy but also reverence and wonder in those who know its place, properties, and history.

In *Earth in the Balance* (1992) Al Gore, then a senator, wrote, “We have become so successful at controlling nature that we have lost our connection to it.”<sup>152</sup> It is all too easy, Gore wrote, “to regard the earth as a collection of ‘resources,’ having an intrinsic value no larger than their usefulness at the moment.”<sup>153</sup> The question before us is not whether we are going to run out of resources. It is whether the theory of welfare economics is the appropriate context for thinking about environmental policy.

Even John Stuart Mill, one of the principal authors of utilitarian philosophy, recognized that the natural world has great intrinsic and not just instrumental value. More than a century ago, as England lost its last wild places, Mill condemned a world

with nothing left to the spontaneous activity of nature; with every rood of land brought into cultivation, which is capable of growing food for human beings; every flowery waste or natural pasture ploughed up; all quadrupeds or birds which are not domesticated for man’s use exterminated as his rivals for food, every hedgerow or superfluous tree rooted out, and scarcely a place left where a wild shrub or flower could grow without being eradicated as a weed in the name of improved agriculture.<sup>154</sup>

The world has the wealth and the resources to provide everyone the opportunity to live a decent life. We consume too much when market relationships displace the bonds of community, compassion, culture, and place. We consume too much when consumption becomes an end in itself and makes us lose affection and reverence for the natural world.