Chapter 9
Threats to Progress

The natural progress of things is for liberty to yield and government to gain ground.
Thomas Jefferson

The more equal men are, the more insatiable will be their longing for equality.
Alexis de Tocqueville

Slaves lose everything in their chains, even the desire of escaping from them: they love their servitude.
Jean Jacques Rousseau

If you pick up a starving dog and make him prosperous, he will not bite you. This is the principal difference between a dog and a man.
Mark Twain

He [The King] has erected a multitude of New Offices, and sent hither swarms of Officers to harass our people, and eat out their substance.
The Declaration of Independence

Progress is far from inevitable. The changes it generates may bring innovation and technological headway to a halt, or mankind may inadvertently take steps which end further advancement. The past has witnessed periods when progress apparently stopped and when humanity actually suffered a degeneration in well-being. Probably the best known are the centuries of disintegration in the West following the fall of the Roman Empire. Life went from a time of many comforts, for example, running water — in some cases hot and cold — widespread literacy, and relative freedom from want to an era when existence was almost universally harsh. Even the rich enjoyed few luxuries, and danger lurked about every castle.

The fall of the Roman Empire instructs us on threats to society. Explanations for the decline of classical civilization range across a broad spectrum of political, religious, and economic reasons; but the economic rationale does seem most persuasive. Rulers and their minions organized the economy of the ancient world. Except for a period of about 150 years from the Roman republic into the early years of the Empire when the city-state's economy depended on private property and citizen initiative, the state controlled almost all commercial activity. It oversaw industry, instituted monopolies, and directed labor

(Rostovtseff 1930). The Roman government under Caesar Augustus organized an office for the sale of grain. Over time the control of grain prices and heavy taxes led to the abandonment of farming and the concentration of virtually all agriculture in huge landed estates, called villas. (Breasted 1938: 566 & 614-615). Much of the land in Italy and Greece was abandoned and grain production fell. In other words, an overreaching government helped bring on the end of classical civilization.

Other civilizations have stagnated or declined as well. After making a number of significant technological breakthroughs, such as printing, gunpowder, and the compass, and founding an educated civil service, the Chinese stagnated for centuries. The Mayan civilization installed irrigation, developed a written language and a complicated astronomical calendar but never invented the wheel and eventually disappeared. Egypt's greatness lasted for over a thousand years, until that civilization fell before the depredations of other, more technologically advanced peoples.

This chapter will focus on three actual and potential threats to progress. The first is the fear that natural limits, including environmental calamities, will eventually bring economic advance to a halt, sometimes foreseen as a cataclysmic crash. The second threat is that nuclear war or a major catstrophic conflict might halt progress. Finally the public's demands for more services and more protection might impose a political system that stifles further innovation.

A Limit to Progress?

Many critics of the current world contend that progress and economic growth contain their own seeds of destruction. In 1972, the Club of Rome published a book, entitled *The Limits to Growth*, predicting disaster unless mankind embarks upon radical reorganization. The theme was hardly novel. Forecasts of doom date back at least to Thomas Malthus who envisioned that the population would expand significantly faster than agriculture, dooming most people to remain in a poverty so extreme that they would subsist on the edge of starvation. More recent critics, such as Paul Ehrlich, have also predicted famine and exhaustion of the world's resources.

The last two centuries have shown that Malthus's forecast was totally wrong, at least for Western Europe. People nearly everywhere eat better than their nineteenth century forefathers. Starvation occurs now because of wars, revolutions and political turmoil, not because farmers are incapable of producing enough food. In fact, one of the most troublesome trade dispute in the post–war period has been over agricultural surpluses and government subsidies employed to dispose of these stock abroad.

Rather than suffering from a decline in the availability of resources the world has enjoyed a growing abundance. The best indicator of scarcity for a mineral, raw material, or

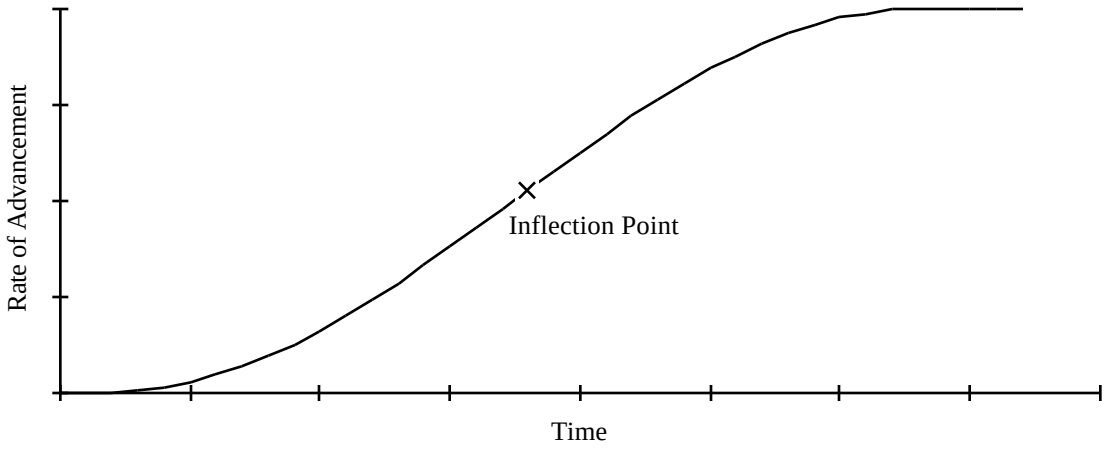
agricultural product is its current price. If buyers and sellers who must make a living on being right about the relative availability of a commodity believe that it will be rarer in the future, they will bid up its price. On the other hand, if they perceive that it will be more plentiful, they will ask less for it. For virtually all raw materials this measure of scarcity has betokened better availability. In The *Ultimate Resource*, Julian Simon demonstrated that the price for energy, steel, aluminum, copper, food, and other resources has fallen sharply over the last two hundred years. This is true not only in terms of the price adjusted for inflation but also in terms of how much effort men and women must devote to acquiring the commodity.

Resource availability has outstripped the growth in population and demand and thus proved Malthus wrong because technology has pared the cost of extracting resources. As the cheap sources of minerals have been exhausted, new techniques and equipment have cut the expense of mining ores from deeper or more remote sites. Malthus was wrong about food production because new farming methods improved crop yields faster than the population grew. At the same time, higher incomes mitigated the birth rate thus slowing population expansion.

More sophisticated Malthusians, for example James E. Krier and Clayton P. Gillette (1985), have argued that technology will not and cannot keep improving at an exponential rate. They claim that technology, like all other resources, will stop proliferating. Rather than expanding exponentially forever, they assert, technology is more likely escalating on a logistic curve — a stretched S shaped arc as shown in Chart 9-1. As the curvature in Chart 9-1 portrays, such a function can have an exponential section where the rate of increase is growing followed by a section where change comes more and more slowly. These critics have suggested that the rate of expansion of technology *today* may be in the exponential portion of the curve *below* the inflection point — the point where the growth rate stops increasing and starts decreasing. This is the section showing an increasing rate of growth. In the future, however, the rate of improvement in technology could slow and perhaps ultimately after many centuries reach a limit.

Chart 9 – 1

TECHNOLOGICAL PROGRESS



I must admit that there is no way to be sure these critics are wrong. Scholars like Julian Simon contend that the rate of progress and the growth of knowledge have expanded at an exponential rate for 200,000 years; it is therefore logical that they will continue to do so. The modern Malthusians, on the other hand, would emphasize that everything has been bounded and that nothing expands at an increasing rate forever. (These are often the same people, it is worth noting, who postulated that the world's population would persist in multiplying at an exponential rate). Nevertheless, as Nobel Laureate Kenneth Arrow wrote (1969: 34): "Eternal exponential technological growth is just as unreasonable as eternal exponential population growth." The debate rests on the question of whether knowledge is limitless. If mankind's understanding of the universe can grow forever, then technology can continue to snowball. Even under those circumstances the rate of growth of scientific enlightenment might slow, although there is no evidence that it is diminishing as yet. In fact, all the data suggest that technology and comprehension of nature are still advancing at an exponential rate.

Even if the critics are correct and the rate of scientific development stops escalating exponentially and eventually slows, it will clearly take many decades, perhaps centures, for that to become apparent. In the meantime, technology will continue to improve, albeit at a flagging pace. By the time the unfolding of knowledge slackens significantly it is quite likely that mankind will have colonized Mars and will perhaps have explored other star systems. Once man is no longer earth bound, he will not be bound at all.

Many observers worry that technology will not always be beneficial. The fear of *Frankenstein* has long been a staple of literature. The recent movie *Jurassic Park* plays on

that emotion. Modern doomsdayers, such as Jeremy Rifken, attempt to block all advances in biotechnology on the premise that outcomes are unknown and potentially risky. In the critique of technological optimism mentioned above, James Krier and Clayton Gillette stress that technology can induce undesirable as well as benign outcomes.

Even though breakthroughs in knowledge and technology are largely neutral in their effects on mankind, man can and has employed advances for harmful activities, particularly war. Although a technology could be fundamentally detrimental, the primary incentives of researchers are to develop new products and procedures that may satisfy a potential market demand. Normally scientists gain little or nothing by creating an injurious microbe, a malignant process, or a destructive product. The invention of cigarettes, the manufacture of designer drugs, and the development of nuclear weapons are certainly exceptions to this rule. Nevertheless, the most advantageous innovations are those that allow consumers or producers to satisfy their needs with fewer resources. This means less waste and hence less pollution. In other words, the developmental process is biased towards helpful and healthful innovations.

None of the innovative products and techniques that have been harmful have produced major detrimental effects. Cigarettes, which may have cut short more lives than any other modern creation, have failed to slow appreciably the gain in life expectancy around the world. The secrets of the atom have *blessed* us with the bomb but may also have ushered in a period of local, rather than total, war. Nuclear science has also contributed greatly to medical progress, advances in electronics, and an understanding of the cosmos.

The fear of technology stems from the fear of the new and the unknown. It also reflects a desire for a simpler, less pressured life. People need not utilize every technology that is developed, but neither should they shrink from new knowledge. Society can constrain developments that bring harm as well as gain. Nations have not employed nuclear weapons since World War II; government controls have curtailed sharply the noxious fumes from auto exhausts; as discussed in Chapter 3 modern techniques are alleviating other assaults on the environment. A better understanding of the world around us is fundamentally beneficial. Although it may affront older world views, in the long run it will root out superstition and prejudice.

Environmental Damage

Many also fear that development and technology harm the environment and ultimately will destroy the planet. For example, biology professor Paul Ehrlich, an environmental radical, has authored a series of books on the supposed ravages from population growth. In his opinion, the current number of people on the earth is

unsustainable, hence he espouses policies to slash the world's population to some fraction of the contemporary level. Dr. Ehrlich's concern centers on the capability of farmers to grow enough food to feed the burgeoning masses. In 1968, he pontificated (1971: 18): "In fact, the battle to feed humanity is already lost, in the sense that we will not be able to prevent large-scale famines in the next decade or so." Again in 1974, he and his wife, Anne, sermonized (1974: 21): "This vast tragedy, however, is nothing compared to the nutritional disaster that seems likely to overtake humanity in the 1970s (or, at the latest, the 1980s). … a situation has been created that could lead to a billion or more people starving to death. …" Following the failure of these forecasts, both Ehrlichs have become more cautious, leaving out any dates in their predictions. Now they simply prophesy (1990: 17): "… human numbers are on a collision course with massive famines. …" Not only have massive famines failed to occur, but, as already mentioned, the major trade conflicts between advanced industrial countries revolve around huge surpluses of food. The European Common Market, for example, staggers under massive stockpiles of grain, butter mountains, and olive oil lakes. Despite being consistently wrong, Paul Ehrlich continues to forecast doom and shortages.

Not to be outdone, in an April 1992, Howard Ris, Executive Director of the Union of Concerned Scientists divined:

> The Earth's population is currently at 5.5 billion and is expected to grow to 10 billion by the year 2040. As a result of the impact of all these people, valuable plant and animal species are disappearing *every single day* and there is a very real possibility that major ecological systems could collapse, food supplies could crash, and civil strife could arise in many nations. … UCS believes that population is an environmental issue as much as it is a religious or ethical one. … the problem is the excessive consumption of food, energy, and other resources by the industrialized world. "Northern" consumption is just as much of the problem today as is the excessive population growth in the "South."

This letter which included the ringing assertion of impending disaster was designed to raise funds to help avert the purported crisis.

Not only are we unlikely to run out of raw materials or food; but contrary to the guilt-inducing scare fantasies, mankind is far from destroying the planet. As Chapter 3 documented, in the advanced countries the environment has recovered over the last few decades. The news media and extreme environmentalists have generated a considerable amount of hysteria in recent years over such threats as toxic wastes, asbestos, dioxin, and PCBs. Virtually all of these "dangers" have turned out to be false alarms in that the harm from these substances has been greatly exaggerated.

In the United States and probably in most of the world, hysteria, poor science, and special interest groups have driven government environmental policy. Many officials and most of the public lack reliable information about environmental issues, so that much of what passes for knowledge in the political arena stems from the wild assertions of self-professed environmentalists.

A corrosive triangle inhibits rational public policy by propagating scare stories through the media, in the congress, and within the environmental community. By developing and spreading fantasies of imminent catastrophes, environmental zealots have found that they can secure attention and achieve, at least in part, their policy agenda. The media know that stories of impending doom sell newspapers and attract viewers. Scientists understand that fear of calamities can generate support for research projects on the significance of the putative crises and possible solutions. An expert who asserts that an alleged disaster is phony or overstated will win little support for his or her research as well as the enmity of his or her colleagues.

The media plays a major role in fostering alarm. Egged on by environmentalists, they have hyped many environmental issues by suggesting apocalypses that disappear upon further investigation. In 1991 at the end of the Gulf War, for example, astronomer Carl Sagan foretold on "Nightline," that the Kuwaiti oil fires could cause "massive agricultural failures" and "very serious human suffering, and in some cases starvation." "Especially for South Asia," he added, "that seems to be in the cards and perhaps for a significant fraction of the Northern Hemisphere." (Mims 1992). As we now know, no famines occurred in the Northern Hemisphere and those in Africa resulted from civil wars or revolutions, not Kuwaiti oil fires.

Stratospheric Ozone Depletion

Environmentalists and many scientists have raised the specter of the destruction of the earth's protective ozone shield from the injection of chlorine into the atmosphere through the release of chlorofluorocarbons (CFCs). Researchers predict that a thinning of the ozone layer will intensify the ultraviolet rays reaching the earth's surface, a strengthening which can damage DNA, produce non-melanoma skin cancer, lead to glaucoma, and reduce some crop yields. In his frenzied book, *World on Fire,* Senator George Mitchell, the Senate Majority Leader, describes a desolate future stemming from the destruction of the ozone layer. He vaticinates (17): "… after the turn of the century … people [will be] getting cancer and dying in epidemic numbers."

Most scientists infer that chlorine atoms from those man-made chemicals, together with extreme cold, have caused the ozone hole found in the early Antarctic spring. However some retain doubts. Evidence of a significant drop in ozone over the Antarctic

dates back to 1958, well before the release into the atmosphere of significant amounts of CFCs. The chemistry of the interaction between CFCs and ozone is complex, involving some 150 chemical reactions. Natural sources of chlorine may play a large role, a possibility seldom publicized. Moreover, scientists do not well understand the effect of solar variability resulting from sunspots on stratospheric ozone. Partly as a result of these uncertainties, the National Academy of Sciences' (NAS's) projections of the CFCs' disintegration of the ozone layer have varied greatly. The estimates for the middle of the next century have fluctuated from a 1979 forecast of an 18 percent erosion to a 1984 prediction of 3 percent. According to the latest calculations, if CFCs continued to be manufactured, depletion will be no more than 5 to 7 percent.

Scare stories, however, make headlines. In February of 1992, NASA warned that conditions were right for an ozone hole to develop over North America. Within a month, satellite data proved that the danger no longer existed, a fact reported, if at all, in the back pages of most newspapers.

The Antarctic hole — a decay in the ozone layer in the worst year of about 50 percent from summer levels — and NASA's data showing a thinning of between 1.6 and 3.1 percent per year in the molecules over the Northern Hemisphere from 1971 to 1988 have convinced most people that a serious problem exists. The largest erosion over North America, however, occurs in the winter, when the sun's rays are weak; during the summer, the average drop is about 1 to 2 percent in the middle latitudes with a slight augmentation in the protective layer between the 53 and 64 North latitudes, which take in Berlin, Moscow, and Fairbanks.

Yet some experts remain skeptical. George Melloan, writing in *The Wall Street Journal,* notes that Dr. Bottiger Verlag, a German scientist, attributes the ozone hole to chlorines emitted by Mount Erebus, a volcano on Ross Island in the Antarctic. Another researcher quoted by Melloan, Dr. Petr Beckmann, believes that "ozone depletion and creation are natural, cyclical phenomena caused by the changing intensity of ultraviolet radiation from the sun."

The intensity of ultraviolet light varies greatly around the globe. It is stronger at the equator where the ozone layer is thinnest and the sunlight most intense and more severe at high altitudes. A 5 percent erosion in stratospheric ozone would produce a rise in UV radiation equivalent to a move from Palm Beach to Miami, hardly a catastrophe. A 50 percent decline in the ozone layer over Sweden, which no one is predicting, would lead to UV levels equal to those of California or the Mediterranean. Moreover, ozone concentrations over the United States throughout a year fluctuate as much as 50 percent,

inducing wide swings in ultraviolet intensity. As a consequence, evolution of plants and animals have bred considerable tolerance for variations in UV radiation.

Interestingly enough, UV measurements so far have failed to find any increase in the United States. The failure of ultraviolet radiation to intensify has been attributed to air pollution! Researchers have concluded that ozone over major industrial areas and sulfur dioxide emissions have apparently offset to date the effects of stratospheric ozone depletion.

Although it may be prudent to phase out CFCs — the cost of substitutes are significant — panic is unjustified. The ozone layer will be around to protect us in the future, and we will be able to deal with any thinning by avoiding excess sun and using proper precautions that light skinned people from northern European backgrounds should take in any case.

Global Warming

The mother of all catastrophes is the specter of global warming. Public television, TV news, radio, and newspapers have been quoting purported experts on the future devastation of the planet that would result from a sharp rise in world temperatures. These Cassandras foresee huge upsurges in the oceans, which would drown coastal cities and low lying islands, as well as an intensification and expansion of droughts, hurricanes, and general human suffering. The Union of Concerned Scientists in the 1992 fund raising letter cited above divined: "The projected temperature increase of as much as 9 degrees Fahrenheit could cause a sea level rise and coastal flooding, changes in climate and precipitation patterns, and other potentially severe problems for individual species and entire ecosystems." Assuming only a 6 degree Fahrenheit rise in temperature, Senator Mitchell foresaw (1991: 69-70):

> The earth's present climate zones and storm tracks would shift dramatically northward, driving millions of displaced people, plants, and animals with them. Thermal swelling with the seas and water from melting landborne glaciers could raise sea levels by three feet, wiping out rice fields in Asia, destroying precious coastal wetlands worldwide, drowning Venice, Cairo, Shanghai, and the Florida Keys, and threatening shorelines along every ocean side. … Dramatic northward shifts in rainfall would turn the now fertile midlatitudes of the world — the breadbasket of the American midwest — into rangeland at best, a dust bowl at worst. … Monsoon patterns would shift, throwing agriculture in Asia into chaos. Ocean currents would veer to new courses, wiping out whole fisheries.
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> Climate extremes would trigger meteorological chaos — raging hurricanes such as we have never seen, capable of killing millions of people; uncommonly long, record-breaking heat waves; and profound

> drought that could drive Africa and the entire Indian subcontinent over the edge into mass starvation.

The prospect of global warming has provided many scientists with opportunities to attract research funds, for publishers to sell newspapers with lurid accounts of upcoming cataclysms, and for politicians to posture as saviors of the planet. Many of the scientists who were predicting a new ice age in the 1960s and 1970s now claim that we are in for global warming. Neither the theory nor the evidence that these scientists advance supports a conjecture that global warming is likely or is already here. Moreover, if the climate does warm, the effect on mankind may be negligible or even beneficial.

It is true that the concentrations in the atmosphere of carbon dioxide, CO_2 — the major greenhouse gas — have risen 26 percent since the pre-industrial age; all greenhouse emissions together — measured in terms of their warming equivalent — have ballooned by about 50 percent. Even though the richest countries in the world may emit the most gases that add to warming, making them culpable according to many, the contribution of some other nations is more of an affliction. Former communist nations and some Third-World countries release more CO_2 in comparison to their incomes than the "wasteful" West. The National Academy of Sciences reported (1991: 8) that China, South Africa, Romania, Poland, India, East Germany, Czechoslovakia, Mexico and the former USSR, in that order, emitted significantly more carbon dioxide in comparison to their GNP. Since official statistics overstated the GNP of once communist countries, air pollution relative to income for those former Marxist states was even worse than indicated by the NAS. In other words, Western countries produce more income using less energy than many much poorer nations.

A few environmentalists estimate that CO_2 concentrations will double by the middle of the next century. Others say it will take longer. According to computer models used by the NAS, this doubling, whenever it occurs, would boost average world temperatures by 3° to 9° Fahrenheit; other models predict anything between negligible change to catastrophic heat. These computer models are similar to those used by the Club of Rome in 1970 to augur that oil reserves would be exhausted by 1990, that essential materials would be in increasingly short supply, and that the world would face massive starvation (Meadows 1972: 58).

A typical climate model involves a huge number of equations and dozens of variables with many factors accounted for by estimated or guesstimated parameters. Only supercomputers running for hours can calculate a solution to the equations. Since errors in any one of the myriad imputs can seriously flaw the output, many observers doubt the predictive value of these exercises. Most climatologists, for example, agree that the

modeling of the influence of clouds on warming has been dissatisfactory. According to a study sponsored by the NAS, entitled *Policy Implications of Greenhouse Warming* (18):

> One major drawback common to all current GCMs [General Climate Models] is that they lack adequately validated representations of important factors like cloud cover feedback, ocean circulation, and hydrologic interactions. …the expected global temperature rise is smaller than current naturally occurring regional temperature fluctuations on all time scales, daily, seasonal, and decadal.
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> …there is no clear connection between temperature records of the last century and the atmospheric accumulation of greenhouse gases. The temperature record for the northern hemisphere, for example, shows some rise until about 1940, a slight decrease from 1940 until the mid-1970s, followed by another rise. … The 100-year temperature record is not inconsistent with the range of climate sensitivity predicted by the GCMs, but *neither is it inconsistent with the natural variability of the earth's climate.*[emphasis mine].

Many other weaknesses in these models have raise doubts about their forecasts. Typically they fail to include the effect of sulfate aerosol discharged into the air, which can cool the atmosphere and consequently may offset the warming caused by CO_2 emissions. The much maligned CFCs also exhibit countervailing influences. As a major greenhouse gas, they add to warming. Ironically the ozone, which they destroy, retains heat as well and thus the reduction of ozone may compensate for their warming effect. These types of repercussions raise major questions about the models' validity.

Non-manmade causes may also have occasioned much of the rise in greenhouse gases. Large volcanic eruptions in the recent past may have produced more pollution than mankind since the beginning of the industrial revolution. The quantities of toxic materials, aerosols, and particulates spewed into the air from just three volcanoes — Krakatoa in Indonesia in 1883, Mount Katmai in Alaska in 1912, and Hekla in Iceland in 1947 — may easily have exceeded those from human activity over the past two hundred years (Ray 1990: 38). According to the former head of the Atomic Energy Commission, Dixy Lee Ray (33), the largest source of greenhouse gases "may well be termites, whose digestive activities are responsible for about 50 billion metric tons of CO_2 and methane annually. This is more than twice the present world production of CO_2 from burning fossil fuel."

A few scientists are in fact skeptical that a rise in carbon dioxide will lead to warming. Reginald Newell, Professor of Meteorology at the Massachusetts Institute of Technology, asserts that increases in CO_2 could actually produce a cooling. Professor Hugh W. Ellsaesser of the Lawrence Livermore Laboratory contends that a doubling of

CO_2 could "have little or no effect on the temperature at the surface and, if anything, might cause the surface to cool."

The January 5, 1990 issue of *Science* underscored these doubts. William A. Nierenberg of Scripps Institution of Oceanography avouched in a letter: "I am certain that most working climatologists believe that there has been no significant increase in temperature in the last 100 years." Richard S. Lindzen of the Center for Meteorology and Physical Oceanography, MIT, sounded the same note: "we [Jerome Namias and Lindzen] simply endorsed the major conclusions of the Marshall Institute report [*Scientific Perspectives on the Greenhouse Problem,* 1989]: namely, that first no evidence for the existence of the 'greenhouse effect' can be found in the temperature records of the last 100 years; and second, current forecasts of global warming for the 21st century are so inaccurate and fraught with uncertainty as to be useless to policy-makers." The Marshall Institute report concludes: "If the correlation between low solar activity and low temperature continues, a natural cold spell can be expected in the 21st century."

General Climate Models fail the most elementary test: the temperature record is inconsistent with their predictions. An unnoticed but major warming by meteorological standards occurred before 1940. Between 1919 and 1921, temperatures in the Northern Hemisphere jumped by about three-quarters of one degree Fahrenheit, almost the entire estimated boost in warming over the last hundred years, yet most people were unaware of this climate change and no catastrophes are connected with it. In the period 1930 to 1970 the weather cooled sharply. Despite the major increase in carbon dioxide emissions since World War II, over the last 50 years average global temperatures have changed little.

These climate models conclude that temperatures should have climbed by 3° Fahrenheit since 1880 whereas the data, for whatever they may be worth, indicate no more than 1° Fahrenheit. Moreover, the models suggest that the greatest warming should occur nearest the poles, and this was true until the 1930s; but in the 1980s warming has been greatest in the middle latitudes. In the last 40 years, the average daytime temperature in the United States has declined slightly while the average minimum has warmed.

Temperature measuring stations around the globe have produced these climate records. In industrial countries reliable data go back about a century. In much of the world, however, few if any weather stations exist. Only a small number of stations are located in the Southern Hemisphere — most of the area is water and the rest is thinly populated. The U.S. is blessed with 10,000 official thermometers; in the South Atlantic, which is about the same size, there are two. Around the globe, the preponderance of stations are located in cities, often at airports. As urban areas spread and pave more of the land, build more concrete structures, and increase heating and air-conditioning (which discharges heat into

the air), local temperatures rise. This heat-island effect can confound the record. Climatologists have attempted to adjust for it, but some believe that their measurements still show biases.

The United States has perhaps the best data in the world, and a National Oceanic and Atmospheric Administration (NOAA) study of U.S. weather over the last 100 years failed to find any significant evidence of warming across the continent. Moreover, satellite data, which is unaffected by the heat-island effect, show no increase in average worldwide temperatures over the last decade even though some terrestrial measurements, as noted, suggest otherwise.

One recent study reveals a very high correlation between average temperature and solar activity, as measured by the length of the sunspot cycle. Another study, this one by three MIT scientists, found that temperatures taken at sea from 1856 to 1986 showed no statistically significant differences between the readings at the start and at the end of this period (*Technology Review* 1989). In fact, if an adjustment is made for the influence of urban growth on thermometer readings, it may be that the climate has cooled over the last 50 years.

The media have found confirmation for the global warming hypothesis in reports of recent record heat levels. Around the world, calendar year 1991 was the second warmest year over land on record. Globally, seven of the past ten calendar years have been warmer than average; but this chronicle could easily have occurred by chance. Tree ring data prove that over the last 1500 years average temperatures have fluctuated remarkably. The rings show hot and cool decades and hot and cool centuries. Temperature data for the last 10,000 years display periods considerably warmer than current readings. In the Middle Ages, the British made wine from grapes grown in England. Between three and four million years ago, when our ancestors were evolving in Africa, the climate was some 5° to 7° Fahrenheit hotter than today.

Higher world temperatures, should they occur, would lengthen the growing season and boost harvests in Canada, Japan, northern Europe, and the former Soviet Union. If, in spite of the evidence, we posit that these general climate models are valid, they predict that average night-time temperatures and winter temperatures should increase the most. Warmer nights and winters will stretch the months available for farming even further. A hotter climate will reinforce ocean evaporation and lead to more cloud cover. Increased cloudiness will blanket the earth, at night maintaining temperatures and, in the day, shielding it from the direct heat of the sun. Should this pattern of warming occur, however, it could benefit rather than harm agriculture. Indeed, since we are in all likelihood approaching the end of the current interglacial warm period, global warming may be advantageous.

Moreover, higher levels of atmospheric CO_2 should also encourage crop production. Plants also use water more efficiently in high CO_2 atmospheres. Two Soviet scientists have concluded: "Increased rainfall over all the continents, along with the 'fertilizer' effect on plants of carbon dioxide, 'will considerably enhance' plant productivity, increase harvests, make large barren territories suitable for agriculture and permit the expansion of crops in other regions." (*New York Times* 1989). A study by R.A. Warrick of the University of East Anglia found that doubling carbon dioxide concentrations would lift yields from major crops, such as wheat, soybean, rice, and barley, by 10 to 50 percent and from other foods, such as corn, sorghum, and sugarcane, by as much as 10 percent. After reviewing a variety of studies, Jane Shaw (1991) calculated that doubling the amount of CO_2 would stimulate farm output by about 33 percent.

Climate models foresee an increase in precipitation worldwide of some 7 to 15 percent. Predictions about the distribution of rainfall vary: some suggest that wetter regions will become wetter and dry regions, drier; other models are consistent with the proposition that all areas will receive additional rain. These models, however, are particularly unreliable when forecasting regional climate changes.

Another rational and reassuring note comes from Robert Pease, Professor of Climatology at the Riverside campus of the University of California. Writing in *The Wall Street Journal*, he observed (1990) that we may now be living in an "icehouse" world and that a warming of about 2 degrees Celsius, which is what his model indicates,

> … may actually make the earth more habitable. The higher temperatures combined with more carbon dioxide will favor plant and crop growth and could well provide more food for our burgeoning global populations. Geologic history reveals that warmer global temperatures produce more, not less, precipitation, a fact reflected by a recent scientific investigation that shows the Greenland icecap to be thickening, not melting. So much for the catastrophic prediction that our coastlines will be flooded by a rise in sea level from polar meltwaters.

The NAS's study on *Greenhouse Warming* (1991) forecasts no more than a 24 inch rise in sea level by the end of the next century, not enough to have a major impact on human development. Any change would be slow enough to enable precautions to be taken. This study went on to report (36-37):

> An increasing atmospheric concentration of CO_2 would increase agricultural production by enhancing the use of sunlight and slowing transpiration in some plants … Countries like the United States, which encompass many climate zones and have active and aggressive agricultural research and development, would probably be able to adapt their farming to climatic changes deriving from greenhouse warming.

Environmentalists visualize a multiplication in the number and an intensification in the severity of hurricanes. Fears of such a waxing traceable to global warming, however, are inconsistent with the record. For the period 1948 to 1987 North America enjoyed warmer weather together with fewer and less destructive hurricanes!

Far from being highly sensitive to climate change, human beings and nature, according to NAS's *Greenhouse Warming* report (1991: 43), are adaptable at a reasonable cost. The difficulty of adjusting to global warming would be small for industry, energy, health, farming, managed forests and grasslands, water resources, tourism and recreation, settlements and coastal structures. For natural landscapes and marine ecosystems the NAS frets that adaptation might involve some hardship, but even in those instances the authors are far from sure.

In his presidential address to the American Economic Association, Thomas Schelling asserted (1992: 6): "I conclude that in the United States, and probably Japan, Western Europe and other developed countries, the impact on economic output [of global warming] will be negligible and unlikely to be noticed." As he pointed out, economic growth in Third-World countries will reduce dependence on agriculture and make those societies less sensitive to climate changes. They will also have more resources to help them adjust to any rise in temperatures. Reducing economic growth in poor countries in order to forestall possible global warming would be a sorry trade. If there is a significant rise in temperatures, stronger economic growth and higher incomes would be of critical importance in facilitating adaptation.

In summary, the evidence for global warming is nonexistent and the theory weak. It may or may not occur, but even if it does, it is more likely to be beneficial than catastrophic; it certainly will not end progress. It is even possible that the greenhouse effect will improve agriculture and make it easier to sustain a larger population. The environmental forecasts of disaster are at best exaggerations; more likely they are totally unfounded.

War, Revolution and Ethnic Strife

"One Nuclear Bomb Can Ruin Your Whole Day," reads one bumper sticker; and war could bring the rein of mankind on earth to a close or set back progress for centuries. Yet guarded optimism appears justifiable. Although ethnic tensions, territorial demands, revolutions, and simple banditry will continue to plague the earth, a total war that would wipe out all life appears to be extremely unlikely. Unfortunately, most countries today are riven with strife amongst various tribes, nationality groups, or religious devotees. In all too many territories, these struggles produce civil wars; in other areas, terrorist groups inflict

violence on civil society; in the best of cases, these tensions are fought in the court room or lead to peaceful demonstrations.

Achieving an harmonious society that incorporates a variety of ethnic groups has proved to be incredibly difficult. The United States has probably succeeded better than almost any other country. The relative success of Americans — the reader knows full well that considerable turmoil and occasional violence between ethnic groups exists in modern America — probably stems from a less intrusive state. Historically the government in the United States has stayed out of the day to day affairs of its citizens. Thus control of the state has been less important. Ethnic groups could ignore legislative affairs as long as the government refrained from regulating their lives. Moreover, the American dedication to equality before the law, not always observed, usually guaranteed minorities justice. More recently policies to enforce equality of outcomes are augmenting ethnic and racial tensions.

The rise in the importance of the government and its increasing role in business, private lives, and social affairs augurs poorly for future civility. As the government tries to balance one group's rights against another's, tension and perhaps conflict become more common. When people's livelihoods depend on state mandates, control of the government becomes vital and the failure to achieve oversight of state affairs can lead desperate people to take up arms.

State control over education is the source of a great deal of the tension in many parts of the world. Typically governments and dominant groups, aspiring to indoctrinate a "national" identify, view a uniform curriculum as the best method of achieving this end. If the principal nationality insists on education in its language and in its customs, minorities typically become resentful and may resort to violence to achieve autonomy or independence. To achieve peace and maintain domestic harmony, the government could fund education without providing it. The state can simply pay for education, letting parents choose their children's schools. This would allow ethnic groups, through their own educational systems, to pass their culture down to their offspring. Political leaders, unfortunately, usually insist on inculcating patriotism in the nation's youths through state schools. Unhappily no good solution seems to exist to reconcile preserving one's ethnic heritage with the forging of a common national identity.

Not only do ethnic tensions sometimes lead to armed conflict, but some people like wars — as long as the violence is contained. Wars dissipate the boredom that haunts the race, furnishing men and women a cause to believe in and die for, if necessary. At the same time, limited wars, however, devastating they may be for those caught in the fighting, are unlikely to change greatly the long term outlook for progress. Moreover, it is rare that the

public as a whole supports war. Politicians typically find that making peace attracts more votes than waging war.

The Bible instructs that "Man can not live by bread alone." A proliferation of goods and services fails to satisfy man's needs. Peace and prosperity may sound desirable and even may be advantageous; but, after an interval of relative somnolence, people become bored. The public feeds on the excitement of war, which affords an escape from the humdrum and burdensome realities of daily life. President George Bush reached unparalleled levels of popularity during the Persian Gulf War. It had all the attributes that the public enjoys: a villain, a just cause, few casualties, and media coverage that brought battle scenes into people's homes in living color and in real time. This thirst for excitement and military victory may easily have contributed to the ease with which participants entered World War I. Hitler marshaled that feeling to motivate the Germans at the start of the next great war.

A reporter for *The New York Times*, Chris Hedges, in an article on Iran reported (A1 & A5) on a former soldier who was badly wounded during the Iran-Iraq conflict. This invalid had been a devoted supporter of the revolution, but he expressed now total disillusionment. The reporter quoted him as saying, however, "you know, I miss the war. I miss believing in something, in fighting for something." As the New Testament quotes an anguished father: "Lord, I believe; help thou mine unbelief." Humans crave to believe and undergo much exultation in dedication to a cause, even, perhaps especially, to killing for the "noble" goal.

Wars today have become far too destructive for many to seriously crave full-scale fighting, although the ardor for throwing Iraq out of Kuwait is disquieting. In part, professional sports may satisfy this same instinct, but sports offer an inferior substitute. Lamentably, at some time in the future, boredom with peace and a minor incident could launch the world on another destructive conflagration. "For what is more excusable than violence to bring about the triumph of the oppressed cause of right?" (Tocqueville 1988: 195).

As I write, the world is caught up in the tragedy of Bosnia and calls for military intervention come from all sides of the political spectrum. Known pacifists, religious leaders, as well as hawks such as Margaret Thatcher have advocated military action. The thirst to punish the aggressor and save the endangered is intense even among those who have scorned the military in the past.

As mentioned in Chapter 1, humans are often most satisfied when devoting themselves to a cause. Efforts to achieve Utopia on earth have led to massive killings and the two major conflicts of the twentieth century. Even today the desire to help the wretched

in Somalia swept away Americans, Canadians, Western Europeans, and individuals from many Moslem states who saw the agonizing photographs of the starving. That military effort cost few American lives and undoubtedly saved many Somalis, but not all such armed interventions are likely to be as bloodless. Moreover, proffer a compelling cause, perhaps mixed with a little boredom and the promise of relatively quick action, and the public could unquestionably applaud military aggression again.

Wars and the preparation for wars can certainly slow and, in the case of a nuclear conflagration, could stop progress. The terrible destructiveness of an atomic war does suppress major conflicts. It is unsettling to note, however, that technology is making nuclear and other weapons of mass destruction cheaper and more available. Nuclear proliferation will occur. Fortunately, nuclear weapons make little military sense in most of the world. They are too destructive, too expensive, and they embrace too few targets. Unstable or irrational cliques, including demoniac dictators, however, can employ such bombs for blackmail. Although the threat of such action is real, it is implausible that such terrorists will launch a major conflagration or endanger the long run progress of humanity.

Even if a calamitous nuclear conflict has subsided as a significant threat in the modern world, the preparations for war can be destructive of the economy and of freedom. As Tocqueville wrote (1988: 650):

> War … must invariably and immeasurably increase the powers of civil government; it must almost automatically concentrate the direction of all men and the control of all things in the hands of the government. If that does not lead to despotism by sudden violence, it leads men gently in that direction by their habits.

Every major war the United States has fought has also aggrandize the national government. In the First World War, as the chapter on democracy pointed out, the central administration took unto itself extraordinary powers, which it abandoned only at the end of the conflict and then with reluctance. Before the Civil War, the United States was to a large extent a federation of independent states, which had delegated limited powers to a central authority. After that bloody conflict, the United States was a single unified state, even though state or local governments still carried out most of the political action. The two World Wars continued the trend, multiplying immensely the authority of the central government.

The Growth of Government

Progress, as the next chapter will contend, is virtually inevitable. As the chapter on regulation and public enterprises established, however, government policies can slow or, even, halt progress. Perhaps the greatest danger to progress, besides the prospect of war,

stems from the demands of the public in prosperous industrial states for government protection from the vicissitudes of life. In modern states citizens expect the government to provide for the poor, the elderly, the sick, and those that are handicapped. Moreover, voters want safeguards against economic failures, handicaps, natural disasters, pollution, crime, excessive fluctuations in prices and markets, foreign competition, and even domestic competition, to say nothing of loud neighbors and noisy leaf blowers.

The United States now enforces federal laws designed to protect people from making hasty decisions — many financial transactions stipulate a mandatory waiting period during which he or she can rescind a contract. In the stock market, investors with limited wealth are constrained from operating in futures markets and other highly risky and also highly profitable areas. The consumer of medicines must secure the permission of a doctor to purchase many drugs. The law forces automobile drivers to buy cars equipped with various safety devices, pollution control equipment, and energy conservation mechanisms. The government now specifies the maximum energy efficiency for a wide variety of appliances. Local governments control what can be built, where it can be located, and who can do the work. City ordinances often specify the style and mode of construction, detailing the materials that must be used. To save energy building codes sometimes stipulate the maximum glass allowable, the type of light fixtures, and the flow capacity of toilets and shower heads. For safety, they demand a basic number of smoke alarms and often regulate their placement.

The government insures our private pensions while taxing us to provide a minimum retirement income, provides health insurance for the elderly and the poor, oversees advertising to insure its accuracy and fairness (except for political advertising, which may be inherently less trustworthy than that for commercial products), regulates the safety of the U.S. transportation system, keeps the airwaves free of *offensive* words and pictures (except for those exhibiting violence), and prohibits us from working too long, or accepting too low a wage, or laboring in conditions that government bureaucrats deem dangerous. Not only do all of these rules cost money, more important, they erode freedom and thus constrain growth and progress.

The demand for protection against the ills of the world seems endless. Seeking to attract votes, politicians become political entrepreneurs. They propose regulatory legislation and new restrictions that they believe voters will favor. Since the costs are hidden, the public views most regulation as a free lunch and has shown itself receptive to virtually all initiatives to protect against possible loss. These protections have gone further in some European countries than in the United States, but they are spreading universally and for identical reasons.

By definition the extension of these controls limits individual freedom. In doing so they curtail experimentation. They restrain men and women from entering voluntarily into agreements that they would fashion in the absence of government constraints. As the chapter on regulation argued, within certain bounds, society can tolerate such controls without paralyzing economic growth, freedom or progress. Nevertheless, the government can go only so far in controlling the public and the economy before its intervention begins to impede material progress and liberty.

The fate of communism shows that there are limits and dangers to government controls over our lives. Compared to economies based on the free market, virtually all communist countries suffered from weak growth. At the time of the fall of the Berlin wall, East Germany was noticeably poorer than West Germany — the per capita income of the communist section was perhaps half or less of their prosperous, capitalist cousins. South Koreans enjoy much higher incomes than do the masses in the northern half of the peninsula. South Vietnam was and remains much more prosperous than the communist North. The people of Hong Kong and Taiwan are much richer than those on the communist mainland. Only since China has slashed its economic controls has growth taken off.

Other socialist states have also experienced stagnation or slow growth. Israel with some of the most skilled and energetic people in the world, Sweden with a strong infrastructure and educated population, and Latin America with a bounty of resources have all suffered from sluggish economic performance in recent years as a result of the state's excessive involvement in the economy and in the lives of the people. In Israel the state either owns or controls over 90 percent of the land. It runs much of the economy directly; the powerful labor union dominates a large portion of the rest. For the last two decades Israeli economic growth has been tepid at best.

Notwithstanding the government's earnest efforts to furnish us with more protection than many of us want, pessimism is spreading in most Western countries. As Warren Nutter observed in 1974 (1983: 16): "We find ourselves in a society in which progress and discontent are engaged in an almost desperate race with each other." This anxiety feeds on real problems. Over the last 50 years, crime has soared everywhere; the inner cities are overwhelmed with drug addiction and violence; teenage pregnancy and an extraordinary divorce rate have led to the partial dissolution of the nuclear family; we are more aware of pollution; the media is full of stories of impending environmental catastrophes; over the last decade incomes have risen if at all much more slowly than earlier in the postwar period, albeit about as fast as the historical average.

Despite these problems, many of which were considered in an earlier chapter, and a widespread perception of decline, there is cause for wary optimism. As pointed out above,

the environment is actually cleaner in wealthy industrial societies than it was in the past and than it is in most of the rest of the world. The so called environmental catastrophes are exaggerated and unlikely to have a major influence on mankind. Crime rates, at least in the United States, leveled off around 1980, unfortunately at a historically high rate. Teenage pregnancies remain an horrendous dilemma; but like the divorce rate, they seems to have stabilized. Although drug addition constitutes a tragedy in some areas, its spread appears to have stopped.

For some reason, however, these "problems" have been translated into a general angst. Perhaps it is television that breeds a sense of fear and doom by bringing the four Biblical horsemen of famines, plague, pestilence and war into our living rooms in living color. On the other hand, the cold war is over and the danger of nuclear holocaust, much reduced. For most Americans and Western Europeans those four horsemen ride only in remote areas where poverty, revolution, and war overwhelm the civil order. Nevertheless, this pessimism has driven a demand for unspecified change, that is new policies whose desired nature or direction is unknown. Politicians seeking to meet this inchoate dream may continue to offer more and more government "protection" at the expense of more and more liberty.

The Love of Equality

The drive toward equality also impels government to become more involved in people's lives. As Tocqueville observed (1988: 57): "…the human heart also nourishes a debased taste for equality, which leads the weak to want to drag the strong down to their level and which induces men to prefer equality in servitude to inequality in freedom." Francis Fukuyama noted that the excesses of wealth in a capitalist country, such as Leona Helmsley's arrogance or Donald Trump's lavish and notorious life style (1992: 295):

> are much more visible that the evils of extreme equality like creeping mediocrity or the tyranny of the majority. …
>
> [T]here is a host of people who devote their lives to the total and complete elimination of any vestiges of inequality, making sure that no little girl should have to pay more to have her locks cut than a little boy, that no Boy Scout troop be closed to homosexual scoutmasters, that no building be built without a concrete wheelchair ramp going up to the front door. *These passions exist in American society because of, and not despite, the smallness of its actual remaining inequalities.* [emphasis mine]

Democracy rests on the principal that "all men are created equal." Originally this meant that each voter was equal to every other in selecting government representatives. Currently public opinion holds that every individual should be given an equal chance to succeed. To substantiate the equality of rights, it was and is vital that society offer the

young a chance for an education and an opportunity to rise as far as he or she can on his or her merits. Thus the public opposes, especially in the United States, special privileges due to birth.

Nature is perverse, however: people are not born equal. Some are very bright; others are stupid. Some are strong; others are weak. Some have special skills much in demand; others have little to offer. Some are energetic; others are lazy. Some are lucky; others are unlucky. Even with equal opportunities, men and women will achieve different levels of wealth, income and prestige.

The demand for equality of opportunity, which is not inimical to growth or progress but actually fosters them, prompts a call for equal results. If equal opportunity still brings great wealth to some and poverty to others, many fancy that justice requires taking from the rich and giving to the poor. Progressive income taxes reflect this view as increasingly does court interpretations of civil rights legislation. The Disabilities Act of 1990, for example, prohibiting discrimination against the handicapped, actually mandates large expenditures to benefit those with disabilities. It requires that all building owners install wheelchair ramps and make other provisions for access by those unable to walk, those who are blind, and those with impaired hearing. Ostensibly the aim is to give the handicapped an equal opportunity to compete with the rest of society, but the effect is to tax those without disabilities in order to finance special facilities for the disabled. (See Kurt Vonnegut's short story, "Harrison Bergeron," for an image of where this might lead.)

The civil rights laws prohibit businesses from hiring on the basis of race, religion, or sex. The legislation authorizes legal complaints on the basis of statistical disparities for failing to offer equal opportunities. Consequently, to protect themselves against law suits, employers must hire minorities in proportion to their number in the population.

Efforts to remedy the ills of discrimination and to foster a more egalitarian society now often conflict with political and economic liberties. That they restrict the freedom of businesses to hire and fire whom they wish was mentioned earlier, but that they have frequently led to efforts to control speech is a new and dangerous phenomenon. Many colleges, for example, have published speech codes prohibiting certain words or types of statements by students, faculty or staff. A number of states have passed laws mandating more severe punishments than the simple violation normally specifies for crimes motivated by race or ethnic hatred.

The "politically correct" movement promotes equality of result as well as opportunity. It seeks to ban certain activities and actions as destructive, detrimental or discriminatory — perhaps even as evil. Research on racial differences, on sexual disparities, or on cultural proclivities is discouraged, not funded, and in some cases

actually prohibited. Last year, for example, a conference on the relationship, if any, between genetics and criminal activity lost its federal funding when African-Americans protested.

Egalitarians can and have extended their agenda farther. Darwin taught us that humans are simply another species of animal, closely related to the great apes. John and Mary Gribbin in The *One Percent Advantage* report on the small genetic modifications in DNA between the chimpanzee and modern man. Touched by this relationship, many impassioned people now champion equal rights for animals. After all, if humans have rights, why should we deny them to close relatives? These well-meaning individuals protest using mammals for medical experiments, as occupants of zoos, as sources of food or clothing, and even as pets. Almost all of these advocates of animal entitlements, however, draw a line at rodents, insects, or viruses.

Exponents of vegetarianism and the elimination of the use of animals for clothing fail to recognize that many species have a symbiotic relationship with humans. If people failed to protect and feed these long domesticated beasts, they could no longer survive. Without humans, cows, chickens, and many types of dogs would quickly become extinct. African elephants, which roam wild, are endangered; Asian elephants, which are useful to the local population, are plentiful.

These efforts at promoting equality and equal rights, although well meaning, slow research and the expansion of knowledge. As such they also reduce the rate of progress. Knowledge on genetic subjects will eventually emerge, but the political correct movement may impede our search to understand the world. Discouraging or making more costly the use of animals in research will also retard medical advances, causing unneeded human suffering and death.

For at least two hundred years, Western society has been evolving towards a society based on equality amongst all human beings. Tocqueville commented on the trend in 1830, and it continues to this day. As mentioned above, equal opportunity is meritorious both ethically and to advance progress. Efforts to achieve equal outcomes, however, must of necessity tax those who do well for the benefit of those who meet with less success. Not only will this discourage the enterprising and able from exercising their talents, but providing an income floor will dilute the incentive for those with few skills to acquire them or to strive for success. The tendency to equate incomes has been most pronounced in communist countries. Captivated by a chimera of a utopian egalitarianism, the megalomaniacal leaders of Cambodia aspired to eliminate all disparities in wealth and income, instituting one of the most ruthless tyrannies in history that murdered perhaps as much as one-third of its citizens — the educated, talented, and entrepreneurial members.

Conclusion

Although the possibility exists that progress may cease, that seems unlikely. Those fearful of limits for the planet Earth overstate possible perils. Even if knowledge is bounded and technology runs out of steam, mankind is poised to migrate beyond this globe, ultimately to reach other worlds in the galaxy. Environmentalists have grossly inflated the injury spawned to date by mankind's activities. Since science will appraise us of future problems that may arise, mankind, given enough information, can plausible handle any new threats to the habitat.

Excessive government and an unbridled push towards egalitarianism introduce much greater dangers than a possible global warming, for they could certainly retard economic growth and with it progress. Nevertheless, given the large number of competing states on this globe, if one country goes too far down the road of government intervention, it will fall behind others and ultimately be forced into changing course. Given this competition, such excess state encroachment on the private sector will ultimately collapse, as it did in the Soviet Union. Only a world government with a monopoly on power, which fortunately seems remote, could actually stifle progress for a long period of time.