# Can America Survive?

Joseph George Caldwell

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This book is devoted to God, and dedicated to my mother, to the memory of my father, and to my wife, Jackie.

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#### I. Introduction

Can America survive? The answer, quite simply, is no – not in its current form for very long, and perhaps not in any form at all for very long. This book describes why pending changes in energy availability, cultural changes brought about by recent massive immigration, the global population explosion, and the proliferation of nuclear weapons, technology and materials will combine to bring an end to the United States as we currently know it – soon.

In the past four centuries, the world human population has skyrocketed, from about half a billion people to six billion at the present time. Population projections from various sources suggest that, barring a major change of some kind, the population will continue to soar, to nine billion or more by the year 2050. In the past half-century – less than a lifetime -- the population of the US has exploded from about 150 million to over 270 million. This explosive growth occurred despite the fact that fertility rates in the US dropped to low levels – it is the result of uncontrolled immigration.

The tremendous global population increase has been brought about by the development of technology to utilize the energy stored in fossil fuels, such as petroleum, natural gas, and coal. Petroleum and gas reserves will be exhausted, however, by about 2050, and coal reserves will not last much beyond that date if industrial development continues to expand worldwide.

Look around you. If you live in the US or other economically developed country, every man-made thing you see or see happening is a product of the expenditure of energy, and most of that energy is derived from fossil fuels. To establish and maintain our present lifestyle requires prodigious amounts of energy – an amount equivalent to about 8,000 kilograms of oil annually for each man, woman, and child living in the country. Pre-agricultural man lived "off the land," consuming only the bounty of nature. Agricultural man could produce about 10 calories of energy with the expenditure of about one calorie of energy. Industrial man, it has been estimated, uses over ten calories of energy to produce a single calorie of food! The present system is not only exquisitely wasteful, but it is completely unsustainable. Most of what you see in the industrial world is a transitory illusion made possible by a one-time windfall supply of energy from fossil fuels that were accumulated over millions of years. When the fossil fuel reserves deplete in about 50 years, the modern world will simply disappear along with them.

Whatever age you are, if you were raised in a town or a small city, go back to where you lived as a child and observe what has happened to the nearest natural field you played in. Chances are it is now urban sprawl – pavement, concrete, and steel. For each immigrant admitted to the US – legal or illegal – about an acre of natural land is permanently destroyed, by roads, buildings, parking lots, houses, schools, and other structures that take the land out of production – both

for wildlife and for agriculture. Last year the US admitted 1.2 million more immigrants. That represents the complete destruction of another .6 million acres of farmland, forest, and pastureland. Who cares? Certainly not the people in charge – they <u>want</u> more people because it makes more money, and they are not particularly concerned with the concomitant destruction of the environment!

Industrial activity at the massive scale of the present is causing substantial changes to Earth's environment. By now, everyone knows that the atmospheric concentration of carbon dioxide and other gases produced by industrial activity is increasing substantially every year, and that the planet's climate and weather are controlled by these concentrations. Large-scale industrial activity is causing substantial changes to the planet's environment – land, air, water, and ecology. In view of the established relationship of the planet's climate and ecosystem to these concentrations, it is possible that man's industrial activity could cause dramatic changes in the sea level, and trigger another ice age or create a lifeless "hothouse." And for what good reason? What is the good purpose of burning all the planet's fossil fuels as fast as possible, when it risks the destruction not only of mankind but of much other life on the planet as well? The answer is "None." This activity cannot continue at current levels without risking dire consequences, even apart from the issue of depletion of fossil fuel reserves and other nonrenewable resources. To continue to do so is the height of folly.

This book describes the current situation and its predicted course. For the US – and any other overpopulated, multicultural, high-energy-use country -- the future is one of war, social fragmentation, and dramatic population reductions. Power will consolidate in a single dominant ethnic group; others will be eliminated or reduced to slavery or serfdom.

This book is not "just another book" on the human population "problem." Thousands of books have been written on the problems of human population, energy and the environment. The real "problem" is that everyone is talking about the problem and no one is doing anything about it. Proposed solutions to date have either failed or been ignored. Environmentalists and ecologists continue to wring their hands while the planet croaks. This book identifies a radically new approach to the problem – one that offers the promise of reducing the risk of ecological destruction to a low level. It identifies an approach to population policy analysis and a course of action that will bring an end to the massive environmental destruction being caused by human industrial activity and significantly increase the likelihood of the survival of the human and other species.

The author of this book has a career that includes both military defense analysis and economic development. He worked for about fifteen years in defense applications and about fifteen years in social and economic applications. His work in military applications includes ballistic missile warfare, nuclear weapons effects, satellite ocean surveillance, naval general-purpose forces, tactical air warfare, air/land battle tactics, strategy, civil defense, military communicationselectronics, and electronic warfare. His work in social and economic development applications includes tax policy analysis, agricultural policy analysis, trade policy analysis, health, human resource development, demography, development of systems for planning, monitoring and evaluation of social and economic programs, and educational management information systems. He has lived and worked in countries around the world. He holds a PhD degree in mathematical statistics and is an expert in mathematical game theory, statistics, operations research, and systems and software engineering. The analysis presented in this book is derived from years of experience related to, and years of analysis of, the population problem.

The organization of this book follows a logical progression, starting with a description of the current state of the planet and human population. Current trends in human population growth are identified. The relationship of human welfare to energy availability is described, and the future availability of energy is discussed. The role of economics to population growth is examined. Policies for determining what the human population size should be are identified. A new approach to population policy is introduced; it is called the "minimal-regret" approach. The likelihood of nuclear war is considered, and the damage that would result from a limited nuclear war is estimated. The impact of this war is assessed for the United States, Canada, and other countries. An assessment is made of the likelihood that the United States and various other countries will prevail after a nuclear war. The relationship of the minimal-regret approach to nuclear war strategies and the postattack environment is discussed in detail.

The main text of the book is generally nontechnical – as much as it can be for subjects (population growth, economics, energy, nuclear war) that are technical in nature. Technical discussions are presented in appendices. The appendices include graphs and tables in support of the arguments presented in the text.

The research underlying the population policy approach introduced in this book was conducted over a four-year period. During the course of doing the research, a large number of books and articles were reviewed and analyzed. The bibliography includes a list of about 600 books that were reviewed. To keep the message of this book as succinct as possible, little description is given of the content of these books. Instead, the most relevant publications are simply listed. Little space is allocated to describing the state of the environment or other population policies – just enough to provide a context for the new material presented.

# II. The Current State of the World

This chapter summarizes the state of the world, from environmental, ecological, economic, and nuclear-warfare perspectives. There are many organizations involved in assessing the state of the world from these perspectives, and it is not the purpose of this book to present another assessment. Some of the leading publications in this area are listed below, and many others are listed in the bibliography:

- 1. <u>State of the World</u>, annual publication of Worldwatch Institute
- 2. Vital Signs, annual publication of Worldwatch Institute
- 3. World Resources, annual publication of World Resources
- 4. World Development Indicators, annual World Bank publication
- 5. World Development Report, annual World Bank publication
- 6. <u>The True State of the Planet</u>, by Ronald Bailey
- 7. <u>The State of Humanity, The Ultimate Resource 2</u>, and <u>The Resourceful</u> <u>Earth</u>, by Julian Simon
- 8. Healing the Planet, by Paul and Anne Ehrlich
- 9. Only One World, by Gerard Piel
- 10. Gaia: An Atlas of Planet Management, by Norman Meyers
- 11. Rescue the Earth! by Farley Mowat
- 12. The Ends of the Earth, by Robert D. Kaplan
- 13. The Greenhouse Book of the Nuclear Age, by John May
- 14. Nuclear Madness, by Helen Caldicott

Recent magazine and journal articles that summarize the situation include:

- 1. "The Coming Anarchy," by Robert D. Kaplan, The Atlantic Monthly, February 1994
- 2. "Must It Be the West against the Rest?" by Matthew Connelly and Paul Kennedy, The Atlantic Monthly, December 1994
- 3. "The Clash of Civilizations?" by Samuel P. Huntington, Foreign Affairs, vol. 72, no. 3, Summer (July-August) 1993, pp. 22-49.

#### Economic State of the World

The primary publications summarizing the economic state of the world are <u>World</u> <u>Development Indicators</u> and <u>World Development Report</u>, published annually by the World Bank. The data summarized in these publications is presented in a CD-ROM that gives access to over 1,000 data tables and 500 time-series indicators for 223 countries and regions. The <u>World Development Report</u> emphasizes selected economic development indicators, whereas the <u>World</u> <u>Development Indicators</u> report presents a more complete, integrated approach to measuring development progress. The <u>World Development Report</u> (WDR) publication provides a variety of indicators for 133 countries and a few basic indicators for 76 other countries (mostly having populations under one million). WDR divides countries into three categories: low-income excluding China and India, middle-income (which is further divided into lower-middle-income and upper-middle-income), and high-income economies.

For the 133 countries for which a variety of indicators is available, twenty-six countries are included in the high-income category. These countries include 902 million of the world's six billion people. The gross national product (GNP) per capita for these countries ranges from \$9,700 dollars (1995 figures) for the Republic of Korea to \$40,630 for Switzerland. For the US and Canada the figures are \$26,980 and \$19,380, respectively. There are fifty-eight economies in the middle-income group, with GNP per capita ranging from \$770 (Lesotho) to \$8,210 (Greece). The population of these countries is 1,591 million. The low-income group includes 49 countries, with GNP per capita ranging from \$80 (Mozambique) to \$730 (Armenia). The population of these countries is 3,180 million.

In summary, a relatively small proportion of the world's population – less than a sixth – enjoys a high economic standard of living. Billions of people live in poverty. Despite concerted efforts by developed countries and development agencies, the last half century has accomplished little more than increasing the number of very poor people from one billion to three billion.

# Environmental and Ecological State of the World

The publications listed above paint a bleak picture of what industrialization is doing to the planet's air, land, water, and biology. Carbon dioxide concentrations in the atmosphere are continuing to mount as forests are cleared and fossil fuels are burned. Chlorofluorocarbons and other industrial gasses continue to destroy the ozone layer protecting the planet's plant and animal life. The average temperature at the Earth's surface has increased by almost a degree (Celsius) in the last 150 years, and by almost half a degree in the last thirty years. While the size of these changes may seem small, they are sufficient to cause very large changes in the world's weather, sea levels, and flora and fauna.

Over the last century the world has lost half its original forest area, and much socalled "reforestation" is simply replacing ecologically diverse forests with monoculture tree plantations. Each year, man destroys another 16 million hectares of ecologically diverse forest. In the article, "A Non-Fuzzy Earth Day," in the May 3, 1999 issue of Time, Pranay Gupte (editor and publisher of *The Earth Times*) summarizes the situation. In the past 20 years, forests have disappeared in 25 countries, and over 95% of the forests have disappeared in 18 countries. There were an estimated 60 billion hectares of forest on the planet just before World War II; now, because of logging, cutting for firewood, and desertification, there are 3.6 billion. (Figures from the World Commission on Forests and Sustainable Development). The World Conservation Union estimates that this forest decline threatens 12.5% of the world's 275,000 species of plants and 75% of its mammals.

The nonbiodegradable waste products of human industrial activity continue to grow unabated. Chemically toxic and radioactive industrial wastes poison more and more of our finite land resources every year.

The destruction to coastal wetlands and coastal fishing areas as a result of manmade pollution has been devastating. Because of the runoff of agricultural chemicals, thousands of square miles of coastal and estuarine areas have been killed.

With respect to biodiversity, tremendous changes are occurring. Two out of every three bird species in the world is declining. Eleven percent of all mammal species are threatened with "immediate" extinction, and another 14 percent are vulnerable to extinction. Eight percent of all reptile species, 10 percent of all amphibian species, and 13 percent of all fish species are in "immediate" danger of extinction. (All classifications and figures from <u>State of the World 1998</u>.)

The bleakest picture of all is painted by economist Julian Simon. He observes that, because of technological advances, the dollar cost of extracting resources from the natural environment falls year after year. As a result, the planet's mineral, plant, and animal resources are plundered at an ever-increasing rate. It has been estimated a dead Bengal tiger's parts now fetch a million dollars. Some time ago, it was speciously argued that if the price of animal products rose sufficiently, steps would be taken to preserve this valuable resource – it just made economic "sense" to do so. The falseness of this proposition has been demonstrated over and over again. So few tigers exist in the wild that they are now considered effectively extinct as a wild species. Similar exterminations of the black rhino, the musk deer, the panda, and other animals have been caused directly by human overpopulation.

While some of the rampant destruction of mammals is direct killing, much species loss is an inevitable consequence of destruction of wildlife habitat, such as forests and wetlands.

The planet is undergoing the greatest mass extinction since the time of the dinosaurs, 65 million years ago. Although nobody knows for sure, it has been estimated (<u>Gaia: An Atlas of Planet Management</u>) that we are losing between 50 and 100 species a day (mostly from habitat destruction) from the 5-30 million species thought to exist. Some scientists estimate the extinction rate at 150 species per day (W. V. Reid and K. R. Miller, <u>Keeping Options Alive: The Scientific Basis for Conserving Biodiversity</u>, World Resources Institute, 1989).

In 1970 there were 65,000 black rhinos in Africa; in 1993 there were just 2,000. The global population of tigers has dropped by 95% in this century, to about 5,000. As of 1994, only a few dozen remained in China. The Caspian, Balinese, and Javan tigers became extinct over a decade ago. The population of Sumatran tigers has dropped to 650, and the Siberian Amur has declined to 200. (See <u>Time</u>, March 28, 1994, "Tigers on the Brink.")

The alarming fact is that the destruction of the Earth's environment is increasing, not decreasing. The level of industrial activity is increasing, not decreasing, and the destruction of the environment is continuing apace.

#### The Nuclear-Warfare State of the World

During the Cold War, the two superpowers were deterred from using nuclear weapons by the strategy of Mutually Assured Destruction. Under this strategy, each side knew that if it attacked the other, it would surely be destroyed in a massive retaliatory attack. This policy evidently worked well, because for the several decades of the Cold War, nuclear war never occurred.

The situation is now quite different. The chance of a large-scale ballistic missile nuclear war may have lessened, but because of the lessening of control over nuclear weapons, technology, and materials (following the disintegration of the Soviet Union), the odds of a small-scale nuclear war would appear to have increased substantially. India and Pakistan recently conducted nuclear-bomb tests, and are now members of the nuclear "club." Their relations are antagonistic. With the decreased level of control over nuclear weapons, technology, and materials, the chance that a "rogue nation" or terrorist group could bomb one or even many cities using small "suitcase-sized" nuclear bombs has probably increased substantially. In any event, the means and opportunity for a small nuclear attack are growing every year. The only consolation is that such an attack would probably not be large (like a full-fledged ballistic-missile attack).

The state of the world with respect to nuclear war was dangerous during the Cold War, and it remains so. While the odds of a large-scale ballistic-missile war may have decreased, the odds of a small-scale nuclear war have increased.

### III. Human Population Growth

This chapter summarizes human population history and describes the current state of human population (size and growth rates).

The root cause of all of the environmental and ecological problems facing the planet is twofold: the very large human population, and the extraordinarily high levels of toxic waste produced by industrial activity. The planet can and has harbored a large number of human beings for very long periods in the past. It has been estimated that the human population has been approximately 2-20 million for the past hundred thousand years, while mankind existed in a hunting-gathering mode, increasing to about 200-300 million after the advent of the agricultural revolution (10,000 years ago).

Human population growth is often depicted in a famous curve called "Deevy's curve," after the man who first presented it (Edward S. Deevy, "The Human Population," <u>Scientific American</u>, vol. 203, no. 9, September 1960, pp. 195-204). This curve is shown, for example, on p. 95 of Cohen's <u>How Many People Can the Earth Support</u>, or p. 101 of Piel's <u>Only One World</u>. It shows three main population surges: one when man invented weapons and tools (three million years ago); one when man developed agriculture (about 10,000 years ago); and one when the industrial revolution began, less than 500 year ago. The three levels of population for these "surges" are global populations of about 2-20 million human beings (preagricultural Stone Age), 200-300 million (preindustrial agriculture), and the present time. The population surge for the present time has not yet leveled off, but it will, very soon.

The total land area of Earth is 148.9 million square kilometers, of which 14.2 million is Antarctica and 11 million is desert. This leaves about 125 million square kilometers of habitable land. A total population size of say, 5 million, hence represents a density of about 4 people every 100 square kilometers. At that low level of population, with no industrial activity, mankind did not materially affect the balance of nature. (The term "balance of nature" refers to the fact that all of the waste products produced by one species are food for other species and the overall system is in a state of relative equilibrium (slow evolutionary change).) The net production of unreprocessed waste is effectively zero. The only significant ecological change attributed to mankind over the millions of years of his hunter-gatherer existence was the extinction of most large mammals (mammoths, mastodons, giant camels, and the like) at the end of the last ice age, about 10,000 years ago, and there is even doubt that mankind accomplished that.

When mankind began to use agriculture, about 10,000 years ago, a lot of forest was cleared, and many local species were exterminated. The rise of civilization was responsible, for example, for the extermination of the black Atlas-mountain

lion, and for the elimination of lions in general from the area occupied by the Roman Empire.

Agricultural man could produce about 10 calories of food energy for the expenditure of one calorie of food energy. This meant that a single man could produce enough food for his immediate family, and still have a surplus that could support a nonagricultural urban civilization. Conversion of much of the land area to agriculture allowed the human population to grow substantially, to the level of a few hundred million at the time of the Roman Empire.

Until about the year 1500, the size of the human population did not change much. Overall, agricultural yields were low – perhaps 1/10 of current yields. Another reason for lack of population growth was limited access to energy resources. About 1500, however, mankind started using coal instead of wood as a major source of energy. The difficulties in extracting coal led to technological advances such as the development of an efficient steam engine. These developments enabled man to utilize much larger amounts of energy. Technological development followed technological development, leading ultimately to man's ability to produce much larger amounts of food. The human population explosion was on!

The population increased to about a billion in 1800, to two billion in 1925, three billion in 1960, four billion in 1974, five billion in 1987, and to six billion today (1999). Human population is exploding at the rate of about 80 million a year, or a billion every twelve years.

As discussed at length in the references of the preceding chapter, mankind's large population size and industrial activity are literally destroying the ecological environment on which he depends for his very existence.

Since the human population explosion threatens our existence, one would think that this topic would receive more attention than any other. Incredibly, this is not the case. Although a number of perceptive books have been written on the subject, they represent a miniscule proportion of all literature.

A number of people have commented on the incredible lack of interest in the population problem. Garrett Hardin has referred to this lack of interest as "discounting in time and space." Any problem far away in time or distance is not given much attention. Whenever I happened to mention to someone that I was writing a book on population to someone, and that major population reductions might not occur for several decades, the response invariably was, "Oh, well, we probably won't even be alive then anyway, so what does it matter?"

The first major work on human population was by the Rev. Thomas Malthus. He argued in 1798 that human population would eventually outstrip man's ability to produce food. He did not anticipate the tremendous increases in agricultural

productivity that were around the corner, however, and so he believed that this crisis would occur very soon, not in a couple of hundred years.

In recent times, it was conjectured that most countries would pass through a "demographic transition," from high birth rates and high mortality rates to low birth rates and low mortality rates. Although there are some examples of this, the demographic transition is largely a myth. Birth rates in the US dropped to below-replacement levels many years ago, so that it would be expected that the population size would drop as well. The problem is that the US economy is committed to growth. The decrease in birth rate was more than offset by an increase in the immigration rate, with the result that the US growth rate is comparable to that of many "third world" countries. The US population policy is for continued population growth of about .5% per year, independent of birth rates. Last year, as noted, the US admitted over a million legal immigrants, with the objective of making them citizens. In addition, the US government repeatedly grants "amnesty" to thousands of illegal aliens, and "birthright" citizenship to any child born on US soil, even of an illegal-alien mother.

There are a number of interesting and insightful books on human population. Some of them are listed below (and many others in the bibliography):

- 1. <u>How Many People Can the Earth Support?</u> by Joel E. Cohen
- 2. Living within Limits by Garrett Hardin
- 3. Only One World by Gerard Piel
- 4. <u>Population Matters</u> by Julian L. Simon.

There are many Internet web sites dealing with human population, including:

- 1. World Population Awareness, http://www.overpopulation.org
- 2. NumbersUSA: http://www.numbersUSA.com
- 3. Negative Population Growth: <u>http://www.npg.org</u>
- 4. Zero Population Growth: <u>http://www.zpg.org</u> .

# IV. Population Projections

Much of the discussion of human population involves projections of what the population size (of particular countries, groups of countries, or the world) will be in the future, under various assumptions about demographic "parameters" such as fertility rates, mortality rates and net immigration rates. These projections are usually not forecasts or predictions or estimates of future population, since they rarely take into account statistical or sociological factors such as uncertainty in the parameter values, politics, war, natural disasters, or disease. This chapter describes population projections.

There is a human "population problem" because the size of the human population is literally exploding, and explosions do not last for very long. The human population on Earth is now extremely large (six billion) and its industrial activity is wreaking havoc with the natural environment to the point of jeopardizing not only mankind's existence but that of all other life on the planet.

As part of the analysis of the population problem, projections are often made of what size the human population will be if current demographic trends continue. The term "demographic trends" refers to the expected values of demographic parameters (fertility rates, mortality rates, and net immigration rates) in future years. Many people and organizations have made population projections. The most widely known global population projections are those of the United Nations and the World Bank. These projections show what the size of the human population will be over the next couple of centuries under various assumptions about the demographic parameters.

The UN and World Bank projections vary tremendously, depending mainly on what assumptions are made about future fertility rates. Fertility rates are declining in many, but by no means all, countries. The World Bank projections assume that fertility rates will fall in all countries to "replacement" levels over the next few decades, so that the world population will level off. (The "replacement" fertility level is the fertility level such that each woman has on average just the number of children in her lifetime to replace herself and her mate, allowing for infant and child mortality. It is about 2.1 children per woman in industrialized countries.) Using the World Bank's fertility assumptions, the world population will be about 8-10 billion people in the year 2050, and about 10-13 billion in the year 2150.

The UN population projections allow for a greater range of variability than do the World Bank projections. The UN projections recognize the fact that fertility rates may not necessarily fall to replacement level for many countries. If this happens, the global population continues to grow. One UN projection even allows for the possibility that fertility rates would fall to below-replacement levels, resulting in a decrease in global human population. Under the UN assumptions about fertility,

world population is projected to grow to between 8 and 12 billion in the year 2150, and to between 4 and 28 billion in the year 2150.

Appendix E presents additional information about the UN and World Bank population-projection methodology (including graphical presentations). Both the UN and World Bank projection models are extremely complicated, involving hundreds of parameters. In addition to describing the UN and World Bank models, Appendix E presents a much simpler projection model involving just two parameters.

Population projections are of interest since they show just how large the human population may grow, if nothing happens to change fertility or mortality levels and trends. Since many other factors are involved in determining population size (e.g., war, disease, famine), population projections are highly speculative. They are "conditional" on the specified values of the parameters, and cannot be regarded as reliable estimates of future population sizes.

So what is the inference to be gleaned from the various projections? The analysis presented in Appendix E shows that the population growth rate falls, on average, to about .5% (one half of one percent) for economically successful industrial nations. When fertility rates fall to below-replacement or near-replacement levels, these countries boost immigration, so that population growth continues. In view of this observation, it is reasonable to expect that the average population growth rate will not fall below the .5% level. Under this assumption, the world population will be about 8.5 billion in the year 2050 and about 13.5 billion in the year 2150. Over that period, the world population will continue to increase by about 68 million per year, or just a little less than the current annual increase (of about 80 million per year).

The point is that the behavior of economically successful nations indicates that, on average, population growth will not stop until one or more external factors come into play. For example, the population growth rate in Japan is about zero. It is a successful industrial nation, but its population density is now extremely high. Unlike other successful industrial nations such as the United States, Canada, and Australia that have population densities that are low relative to other countries, Japan is not allowing immigration to swell its population (or destroy its culture, but that is the subject of another chapter). Based on observed data, economically successful developed countries (on average) slow their population growth only when the population density has increased to intolerable levels.

In summary, in view of the population behavior of the world's nations over many years, it is reasonable to expect human population to continue to grow in the future, by about the same amount each year as it has grown in the past. If current demographic trends continue, the global population will continue to soar, to about 9 billion by the middle of the next century and double its present size by

the year 2125. Since the planet is already exhibiting great stress from just six billion human beings of which only a fraction are industrialized, it stretches the imagination to conceive our planet with twice as many people, with an even higher proportion of them industrialized. Environmentalists and ecologists warn of all sorts of impending disasters as mankind destroys much of nature and presses resource limits (e.g., fresh water, agricultural land, the seas) to the limit. Population projections from whatever source – the UN, the World Bank, or the two-parameter projection model presented in Appendix E – show very clearly that the "population problem" is worsening, and that we are headed for more trouble than we are already in.

# V. Carrying Capacity Estimates

The population projections discussed in the preceding chapter are of rather limited value, since they do not address the crucial issue of what the future values of the model parameters are likely to be. They do not take into account resource constraints, such as the availability of agricultural land and fresh water, or the effects of pollution, that may curtail population growth long before it increases much more. This is true both for the exquisitely complex UN and World Bank models and for the simple two-parameter model of Appendix E. The projections show that if demographic trends continue the global population may reach nine billion or twelve billion or even twenty billion people by the end of the next century, but they do not address the issue of whether those levels of human population are reasonable, in light of the planet's size and resources.

In view of the terrible problems mankind is causing with a population of six billion (of whom relatively few are industrialized), it is of course reasonable to address the issue of whether the planet can support nine or twelve or twenty billion people, or a higher level of industrialization. This brings us to the subject of "carrying capacity." The (human) carrying capacity of Earth is an estimate of the maximum number of human beings the planet can continue to support indefinitely. Consideration may also be given to quality of life, in which the issue is how many people at what standard of living. This chapter discusses carrying capacity.

The Earth can support several million human beings at a hunter-gatherer level of existence for millions of years – that is known from history. (See Joel E. Cohen, <u>How Many People Can the Earth Support</u> for discussion of human population history.) Similarly, from history it is known that it could support a couple of hundred million human beings at a non-industrial agricultural level, for several thousand years. The environmental cost of that activity was, of course, high. Mankind may have destroyed a number of animal species even as a hunter-gatherer (i.e., possibly the large mammals at the end of the last ice age), and many local plant species may have been destroyed as forests were replaced by monocultural agricultural fields.

Species destruction is not a primary concern of carrying capacity estimates. It is already known that mankind has destroyed many species, and will continue to do so if it continues to occupy the planet in large numbers. The central issue of carrying capacity estimation is whether the human species will survive, and how large the human population can be, regardless of what happens to other species. For example, if it can be credibly demonstrated that the global warming caused by six billion human beings (of which a billion are industrialized) will ultimately destroy so many species that ecological collapse ensues, then the carrying capacity is less than this. If, on the other hand, it can be demonstrated that at this level of population a sufficient balance of nature can be retained to support agriculture, then the carrying capacity is at least this size, even though mankind may ultimately destroy virtually all large wild mammals and birds.

The key issues to address in carrying capacity estimates, then, are how many people may be supported indefinitely at what level of living? An incidental item of interest is, with what cost to nature (e.g., with the survival of other large mammals as well).

In addition to consideration of the maximal stress that human beings may place on the planet's ecology without catastrophic results, carrying capacity estimation also address the issue of limitations on human population size imposed by planetary resource constraints, such as fresh water and energy.

Although population projections receive more attention than carrying capacity estimates, interest in the latter topic is growing. Some major organizations/ books/articles on the subject are:

- 1. Carrying Capacity Network, Washington, DC (see Internet web site http://www.carryingcapacity.org)
- 2. Joel E. Cohen, How Many People Can the Earth Support?
- 3. David Pimentel and Marcia Pimentel, eds., Food, Energy, and Society
- "Natural Resources and an Optimum Human Population," in <u>Population and</u> <u>Environment: A Journal of Interdisciplinary Studies</u>, Vol. 15, No. 5, May 1994, by David Pimentel, Rebecca Harman, Matthew Pacenza, Jason Pecarsky, and Marcia Pimentel.
- 5. Optimum Population Trust (OPT), David Willey, Pres., Manchester, England
- 6. Julian L. Simon, <u>The Ultimate Resource 2</u>

In simple terms, the general approach to determining Earth's human carrying capacity is to specify the resource requirements per person for a particular lifestyle, to estimate the total planetary availability of those resources, and then to calculate the maximum number of persons simply by dividing the per-person requirements into the total available resource. For example, it has been estimated that on average each hectare of land on the planet can support about two people, at a minimal level of food and energy consumption. Since the planet has about 12.5 billion hectares of habitable (nondesert, non-Antarctic) land, it may then be estimated that the Earth can support approximately 20 billion people. Of course, it is possible that using all of the planet's land area for human use might be so destructive to the environment that this level would not be possible. Since no one really knows how severely the planet's ecology can be stressed by human industrial activity without catastrophic results, this carrying capacity estimate is rather fanciful.

David and Marcia Pimentel and their colleagues have produced much useful research on the subject of human carrying capacity. Their book, <u>Food, Energy</u>, <u>and Society</u>, is a superb resource on this subject. A good summary of their work

is presented in the paper, "Natural Resources and an Optimum Human Population" (David Pimentel, Rebecca Harman, Matthew Pacenza, Jason, Pecarsky, and Marcia Pimentel, <u>Population and Environment</u>, Vol. 15, No. 5, May 1994). They estimate that Earth may be able to support about 10-15 billion people living in poverty and malnourishment, or about one to two billion people at a good standard of living, for quite some time.

David Willey of The Optimum Population Trust presents a good summary of carrying capacity estimates in his paper, "Optimum Population for Europe" (paper presented at the International Workshop on Population and Environment, Rome, October 28<sup>th</sup> and 29<sup>th</sup>, 1996). He discusses three capacity estimates: the minimum population, the maximum population, and the optimum population. The minimum population is the smallest number of human beings required to achieve a high standard of living for everyone. The maximum population is the same as the carrying capacity. The optimum population (or, in US English, the optimal population) is the maximum number of human beings that can be supported indefinitely at a high standard of living, taking into account a variety of other considerations about quality of life. The optimum population lies between the minimum and maximum populations, but is generally close to the minimum.

Willey's estimate of the minimum population is about half a billion. His estimate for the maximum population is the same as Pimentel's, i.e., 1-2 billion. Willey calculates the optimum population for a number of different countries, but not for the world.

Julian Simon and other economists argue that the world can easily support even more people than it currently does, at a good level of living. Their arguments are vacuous, in view of the fact that the number of desperately poor people in the world has risen dramatically in the past half-century, despite Herculean efforts by the World Bank, UN and other development agencies to accomplish otherwise.

Economist Lyndon LaRouche (candidate for the 1988 US presidential race) argued strongly for a substantially higher global human population than presently exists. In his book, <u>There Are No Limits to Growth</u>, he states that "our planet could sustain a population of tens of billions of persons, and at an average standard of living higher than that for the United States during the early 1970s." In the article, "The World Needs 10 Billion People," Steven Bardwell argued that "a nuclear-powered, high-technology human civilization that is capable of colonizing the solar system cannot function with fewer than 10 billion of us" (<u>Fusion</u>, September 1981). He observed that as population increases, the division of labor allows for more efficient use of human resources and hence greater productivity.

The fact that physical scientists estimate that the world is losing 50-150 species or more per day because of human activities such as deforestation, pollution, pesticides, and urbanization is of little or no concern to economists such as Simon and LaRouche. They routinely pooh-pooh such observations about human-caused destruction of the world environment and ecosystem as erroneous, unfounded, overblown, or of no consequence. That we may all be as crowded as the people of Japan, or Singapore, or Hong Kong, and live in a world devoid of tigers, pandas, eagles, and whales is of no significance, as long as economic productivity increases!

### VI. Planetary Forecasts

The preceding chapters have described projections of global population if current trends continue, and estimation of the minimum and maximum populations that the planet may support at various standards of living. Although these projections and estimates provide an indication about what may happen or is potentially achievable, they are not forecasts about what the future size of the human population is likely to be. This chapter discusses forecasts (estimates, predictions) of the future size of the human population.

Forecasts are relevant to the population problem because they address the issue of what the future is likely to be. Population projections are simply unconditional extrapolations of what the population size will be, ignoring all other factors such as planetary resource constraints (land, water, energy). Carrying capacity estimates take resource constraints into account, but they do not address the issue of what population sizes are most likely. Projections and carrying capacity estimates are of interest, but they are of limited scope and value. Forecasts take into account both of these, and all other factors (e.g., political, religious, ethical, sociological, ecological) as well.

Demographers are reluctant to make forecasts about future population sizes because of the large number of variables that affect population size, and the tremendous uncertainty about their behavior. These variables include disease, natural catastrophe, famine, ecological collapse, and politics (including war). In view of the fact that the world's political leaders pay attention to economists but not to ecologists, it is rather obvious that the human population will simply continue to increase, and that economic activity will increase to an even greater extent (as poor countries industrialize), until some sort of catastrophe imposes a halt. While it may be possible to make forecasts of demographic processes under stable political and economic conditions, it is very difficult to make forecasts involving "shock" type events, such as the outbreak of nuclear war or ecological collapse.

Virtually all "forecasts" about the future human population size are "conditional," such as, "If mankind continues to destroy the environment, human population itself will collapse;" or "If mankind continues to flood the atmosphere with greenhouse gases, the planet may warm and much life will be destroyed;" or "If mankind continues to destroy tropical rain forests, a substantial proportion of all species will be destroyed." The chilling but apparent fact is, however, that virtually nothing of substance is being done to reduce economic activity on the planet to reduce the risk of this catastrophe. A few halfhearted actions have been taken to slow the destruction, but these actions merely delay the day of reckoning, they do not avoid it.

We are presently in the greatest mass species extinction since the time of the dinosaurs, 65 million years ago, and it is being caused by human economic activity. Yet where are the calls for reduced economic activity? All nations are committed, quite the opposite, to increased economic growth. The human species is racing headlong to disaster, just as lemmings to the sea, apparently totally unwilling or unable to do anything about it. It is drunk on the fruits of economic activity, and powerless to turn away from this disastrous course. The situation has worsened steadily and obviously for the past four hundred years, and the pace of environmental destruction is now "warp speed."

The people who monitor the environment and ecology have good data supporting the assertion that massive industrial activity is making substantial changes to the planet, destroying many species, and jeopardizing our very existence. And the people who construct optimal population estimates have reasonable arguments that the planet may well be able to support one billion human beings at a reasonable standard of living. Despite both of these situations, the status quo is "full speed ahead" to the maximum population possible, regardless of the consequences.

There are reasons why the human population will continue until its growth is halted by external forces, and they will be discussed in later chapters.

I have a forecast, and it is not conditional. My prediction is that the human population will be on the order of a few tens of millions, and no more than a few hundred million, within just a few years. This book will explain why.

VII. The Relationship of Population and Quality of Life to Energy Consumption

The quality of life for human beings varies tremendously over the planet. There are rich countries where most of the population enjoy a high standard of living, and poor countries in which most of the population live in extreme poverty. In general, the standard of living of a country is directly related to the amount of energy used by the citizens. This chapter describes the relationship of human quality of life to energy consumption.

Human population increased dramatically, from 2-20 million to hundreds of millions, with the advent of agriculture. By about the year 1500, however, limited availability of wood for energy and construction material was imposing a definite constraint on additional population growth, particularly in Europe. As mentioned earlier, about this time mankind started making use of coal as a source of energy. Technical innovations such as the development of improved steam engines led to an increased ability both to access coal and to utilize it. The combination of technological development and availability of large amounts of coal as a source of energy enabled significant population growth to occur. Since about 1650, the global human population has exhibited consistent growth, with a recent growth rate of about 1.4% per year.

The current explosive growth in the human population has been made possible by the availability of a large amount of "cheap" energy. Some people mistakenly believe that the current large population and high standard of living (for some people) is due to technology. Technology without energy is useless. On the other hand, energy without technology is also useless (for industrial applications, not for natural biological processes). To use energy it is necessary to have an energy source (e.g., the sun, uranium) and the technology to harness it. The human population will continue to grow as long as cheap energy is abundantly available. When fossil fuels run out and cheap energy is no longer available, the human population will decline markedly. All the technology in the world is of no avail (for industrial activity) without a source of energy.

The availability of large amounts of energy is responsible not only for the explosive growth in the human population, but for virtually every material, social, and economic benefit of human society. Appendix F presents a number of graphs that show the relationship of a variety of social and economic indicators to commercial energy use. These graphs show that, on average, the citizens of a country enjoy a high quality of life (e.g., high life expectancy, low infant mortality, high literacy rates) when the per capita commercial energy consumption exceeds 2,500 kilograms of oil equivalent (koe). As the energy consumption falls below that level, the quality of life falls accordingly. The level 2,500 koe is the minimal energy level required for a country to be able to provide a good standard of living for its citizens.

The main implication of this observation is that the provision of a minimum of 2,500 koe per capita per annum to all human inhabitants of Earth will require either a dramatic increase in the amount of energy available, or a dramatic decrease in the human population size. The following paragraphs show some of the calculations underlying the situation.

The current commercial energy consumption of all countries in the world is about 8,000 megatons (million tons) of oil equivalent (International Energy Agency, <u>Energy Statistics and Balances of Non-OECD Countries</u>, 1993-1994, p. 61). This means that at current production levels, the average energy consumption per person worldwide is 6 billion people divided by 8 billion tons of oil equivalent, or about 1.333 tons of oil equivalent (toe) = 1,333 koe (the "official" figure for 1995 is 1,474 koe, according to <u>World Development Report 1998/99</u>). For each of the world's current six billion people to have access to 2,500 kilograms (2.5 tons) of oil equivalent annually would require a total production of 15 gigatons (billion tons) of oil equivalent (6 billion people x 2.5 toe per person). That is about double current production. When the world population reaches nine or twelve billion, the amount required will be 22.5 gigatons or 30 gigatons, respectively, or three or four times current production.

When compared to the energy that will be available from current solar sources, the comparisons are even starker. Pimentel et al. estimate that a maximum of 200 quads (quadrillion BTU, where "quadrillion" means one million million) of energy might be available for human use from solar sources, or about five billion tons of oil equivalent (toe). This is about five gigatons of oil equivalent (Gtoe). (See Appendix B for factors for converting from BTUs to other energy units.) That is, the amount of energy that would be required to provide twelve billion people with 2.5 toe (i.e., 30 Gtoe) is about six times that available from solar energy (i.e., 5 Gtoe).

What does this mean? Well, China and India intend to raise the standard of living for their two billion people to a level comparable to the rest of the world. At a level of 2.5 tons of oil equivalent (toe) per person, that will require 5 billion toe of energy, or all of that available from solar energy. This means that, when the oil, gas and coal run out, China and India will require the entire solar energy budget for the planet, just for their people alone. This means either that there will be an awful lot of nuclear power being used, or the rest of us will just have to go!

And the problem is not just China and India. Figures 26-28 of Appendix F summarize the distribution of commercial energy use for the countries of the world. These figures show that the vast majority of countries (about 55%) have per capita commercial energy consumptions of 1,000 koe or less, and that only 25% have per capita energy consumptions of 2,500 koe or more. In other words, in the world of today, relatively few countries have per capita energy use levels that enable a high standard of living. Most of these countries have no access to

nuclear power, and it is unlikely that they ever will. When oil, gas, and coal run out, there are going to be a lot of very unhappy people around.

# VIII. Energy Sources

The previous chapter discussed the strong relationship of human welfare to energy consumption. This chapter describes sources of energy. It summarizes current sources and prospects for the future.

#### Fossil Fuels

The major source of energy for mankind at the present time is fossil fuel. Starting about 1500, mankind started using coal. In the 1800s, oil joined coal as a source of energy, and in the late twentieth century natural gas is also being used in large quantities.

The following table shows world commercial energy consumption and proven commercial energy reserves for various types of fuel, in petajoules, for 1991 (source: <u>World Resources 1994-95</u>, pp. 166-167; 1 petajoule =  $10^{15}$  joules = 947.8 x  $10^{9}$  BTU).

Fuel Type	Production	Consumption
Liquid	132,992	119,178
Gas	76,275	76,315
Solid	93,689	93,947
Nuclear	22,669	22,669
Hydro	9,311	9,311
Total	334,890	321,430

The following table (same data source) shows the proven commercial energy reserves for 1990, and ratio, R/P, of reserves to production, which is an estimate of the number of years of production remaining:

Reserves	R/P
19,891,141	
4,582,845	
24,473,986	209
5,639,794	45
5,004,802	52
34,578,702	
	Reserves 19,891,141 4,582,845 24,473,986 5,639,794 5,004,802 34,578,702

These tables show that even at current rates of production, it is projected that oil and gas reserves will be exhausted in the next 50 years, and coal reserves within about 200 years. People argue about just exactly what the true size of the reserves is, but the point is that before very long industrialized man will have exhausted the fossil fuels. These projections are somewhat conjectural, since the burning of all of the oil, gas, and coal reserves, accompanied by the burning of much of the world's forests, would add such a large amount of carbon dioxide to the atmosphere that some sort of major climatic change would be expected to occur before exhaustion of the reserves.

The planet's oil reserves are about half used up. The "bell-shaped" production curve of the planet's coal and petroleum ages was made famous in 1960 by M. King Hubbert, principal fuels geologist of the US Geological Survey. (See Gerard Piel, <u>Only One World</u>, p. 176 for an illustration of Hubbert's curves / Hubbert's cycles.)

Although there is a considerable amount of coal on the planet, it is distributed very unevenly. The following table shows the reserves for the sixteen countries having the largest recoverable, according to the World Energy Council (WEC) and British Petroleum (BP) (source: <u>The Wiley Encyclopedia of Energy and the Environment</u>, vol. 1, p. 379; WEC figure shown unless otherwise indicated):

tons)

Country	Total Recoverable Coal (million metric
China	730,505 (WEC) – 166,125 (BP)
United States	240,920
USSR	239,020(BP) - 40,936(WEC)
Australia	90,916
Germany	80,047
India	62,531
South Africa	55,318
Poland	40,390
Yugoslavia (former)	16,565
Colombia	9,663
Turkey	6,102
Czechoslovakia (former)	5,369
Hungary	4,460
Bulgaria	3,729
Botswana	3,499
Indonesia	2,999
World	1,662,930

The top three countries possess almost 70% of the recoverable coal reserves (using the WEC figures).

The point to the preceding table is that, although there may be sufficient coal to last for about 200 years at current production rates, most of it is in just three countries. Much of the current oil and gas supply is in low-population countries, such as Saudi Arabia, that cannot possibly use all of the production for themselves. They are hence quite willing, indeed eager, to sell it to other countries. When oil and gas are gone, and only coal remains, and the few (large-population) countries that possess it need all of it for their own populations, it will be interesting to see how much is offered for sale to other countries.

# Other Sources of Energy

There are a number of good sources on energy information and data. Two of the best are:

- 1. Food, Energy, and Society, by David Pimentel and Marcia Pimentel, eds.
- 2. <u>Energy for Tomorrow's World</u>, by the World Energy Council.

Pimentel et al. provide a summary of solar energy resources in the article, "Natural Resources and an Optimum Human Population."

Other useful sources of energy information and data include the following.

- 3. <u>Survey of Energy Resources 1995</u>, World Energy Council
- 4. International Energy Outlook 1998 with Projections Through 2020, Energy Information Administration
- 5. International Energy Annual 1996, Energy Information Administration
- 6. <u>Annual Energy Review 1997</u>, Energy Information Administration (historical statistics)
- 7. <u>World Energy Outlook 1996 Edition</u>, International Energy Agency (OECD)
- 8. <u>Global Energy: The Changing Outlook</u>, International Energy Agency
- 9. Energy Statistics of OECD Countries, 1993-94, OECD
- 10. Energy Balances of OECD Countries, 1993-1994, OECD
- 11. Energy Statistics and Balances of Non-OECD Countries, 1993-1994, OECD
- 12. Energy Statistics Yearbook 1994, UN
- 13. <u>The Wiley Encyclopedia of Energy and the Environment</u>, vols. 1 and 2, by Attilio Bisio and Sharon Boots
- 14. <u>The Prize</u>, by Daniel Yergin (also a PBS television series)
- 15. World Resources 1994-95, by World Resources Institute (has more tables on energy than later editions)
- 16. <u>Cool Energy</u>, by Michael Brower
- 17. Brittle Power: Energy Strategy for National Security, by Amory B. Lovins and L. Hunter Lovins

Much energy data is available for free on the Internet at the Energy Information Administration's web site, <u>http://www.eia.doe.gov</u>. The best Internet web site on energy, with much discussion of the relationship of human population size to the availability of fossil fuel, is Jay Hanson's web site, <u>http://www.dieoff.com</u>. That web site includes copies of many interesting articles, including those by David and Marcia Pimentel.

In the article, "Solar Energy and Other 'Alternative' Energy Sources," in <u>The</u> <u>Resourceful Earth</u> by Julian Simon and Herman Kahn, eds., Petr Beckmann (author of <u>A History of Pi</u>) describes the difficulties in making use of solar energy. He notes that the total insolation (yes, the word <u>is</u> inSOLation) of the globe (solar energy reaching Earth) is 178,000 terawatts, or 4,500 times mankind's present rate of energy consumption. The big problem is that the energy is very dilute – an average of about one kilowatt per square meter. When concentrated by nature, as in fossil fuels or wind or in rainfall (that feeds hydroelectric dams), solar energy is "high-grade." Otherwise, it is a very inefficient source of energy, since tremendous losses are involved in transforming it to high-grade energy (such as electricity or liquid fuel).

The Energy Resources Advisory Board of the US Department of Energy (<u>Biomass Energy 1981</u>) estimates that only .1% of the total solar energy reaching the Earth can be harvested as biomass in temperate and tropical regions.

Taking into account nighttime and clouds, the power density figure of 1kW/m<sup>2</sup> drops to about 100 W/m<sup>2</sup> in moderate latitudes. The losses involved in converting this low-grade, dilute energy to high-grade concentrated energy range from .7 for heat collectors (e.g., solar hot-water heaters) to .00008 for biomass. The end result is that although the total amount of solar energy striking the planet is very great, after transforming to high-grade energy it can produce only a fraction of man's current total energy consumption.

As noted by Pimentel et al., mankind is currently utilizing about half of all of the solar energy captured by plant photosynthesis, and even this is not sufficient to cover its food, forest products, and energy consumption. Worldwide, only about one-sixth of man's total energy use is from solar sources (hydropower, biomass), and about five-sixths is from fossil fuels. As fossil fuels deplete over the next century, mankind will have to look to other sources of energy. The major alternative sources are nuclear power and solar power.

Renewable solar power includes a wide variety of technologies, including solar thermal, photovoltaic, wind, hydropower, and biomass. Pimentel et al. estimate that worldwide solar energy could be developed to produce about 200 quads (1 quad = 1 quadrillion BTUs) of energy per year on a sustainable basis. This is much less than the 369 quads of energy currently being consumed each year.

Not all forms of energy are equivalent, from the viewpoint of usefulness. Solar heat collected to heat residential water is "low-grade", unconcentrated energy that is useless for running motors or powering electric arc welders. The electrical power generated from the water rushing through a large hydroelectric dam is "high-grade," concentrated energy that can be used to generate high-voltage electricity to perform a wide range of industrial functions.

As noted, much solar energy is low-grade energy (e.g., heat, not electricity). Furthermore, many solar energy devices have an "energy yield" of less than one, i.e., they require more energy to produce than they ever generate. Moreover, they often produce only low-grade energy, while the energy required to produce them is high grade (e.g., a solar water heater). While it may make economic sense to produce such devices when fossil fuels are available at very low cost (e.g., to produce power for special applications such as solar-powered calculators or space satellites), they will never be used to generate power on a large scale since they generate less energy over their lifetimes than is used to make them. When was the last time you saw a factory totally powered by solar cells that was producing solar cells? Never. And you never will. Most solar energy devices, except for hydroelectric power, wind, and biomass, are economically feasible only when essentially "free" high-grade energy is available for their production, in the form of fossil fuels.

Clearly, when fossil fuels run out, mankind will be forced either to reduce its standard of living dramatically, or reduce its total population size dramatically, or turn to sources of energy other than solar.

It is also important to recognize that each time energy is converted from one form to another, energy is lost in the form of wasted heat. To get the most out of the sun's energy, it is important to avoid energy conversions. For example, it is much more efficient to use a windmill directly to pump water (as in remote ranches in the western US) than to use the windmill to drive an electric generator to generate electricity that is then stored in an electric storage battery, and then used to drive an electric motor to pump the water. Or, it is much more efficient to use heat direct from the sun's rays to heat water, than to harvest biomass, ferment it to produce alcohol, and then either burn the alcohol or use it to generate electricity which is in turn used to power electric heaters. The 200 quads of energy mentioned earlier is a "mix" of low-grade and high-grade energy (e.g., some from direct heating, some from biomass, some from hydroelectric, some from wind). It is not at all the equivalent of 200 quads of oil or 200 quads of electrical energy.

Nonsolar sources of renewable energy include tides (lunar energy), geothermal (from the internal heat of the Earth), and nuclear energy (from uranium). Tides and geothermal can produce only limited amounts of energy in a few locations. And that brings us to nuclear energy.

#### Nuclear Energy

There are two basic types of nuclear energy: fusion and fission. Today's nuclear reactors are all fission reactors, i.e., they generate energy by splitting atoms. Fusion nuclear energy is generated by joining together, or fusing, hydrogen atoms into helium atoms. When this fusion takes place, some matter is

converted to energy, in accordance with Einstein's famous  $e=mc^2$  equation. Fusion energy is the type of energy produced by the sun. The sun is, in effect, simply a large helium factory. The problem with fusion is that it is extremely difficult to start and maintain a fusion reaction. Although the technical feasibility of producing a fusion reaction has been established, the goal of maintaining a fusion reaction for a long time and developing a commercial fusion reactor has remained elusive. Despite the expenditure of billions of dollars and decades of time, it is not clear that a commercial fusion reactor will ever be developed.

Even if it is, fusion reactors are problematic. First, they are very inefficient. They consume a great deal of energy in order to produce just a little more than that consumed. They generate large amounts of heat, which is disposed into the aquatic environment. Finally, the fusion reaction eventually makes the entire fusion reactor radioactive, resulting in a massive and never-ending environmental problem of radioactive waste disposal.

In view of the extremely serious drawbacks of nuclear fusion, and the failure to develop it despite massive investment, it would be folly to count on nuclear fusion as an alternative to fossil fuels.

Unlike fusion, fission nuclear energy has been used commercially for decades to generate electricity. Fission nuclear energy, however, is also extremely problematic. First, it generates large amounts of radioactive waste. Fission reactors work by splitting uranium atoms into other atoms. Just as with fusion, some matter is converted to energy in this process, resulting in the production of large amounts of energy. Unfortunately, the atoms produced by the fission process are highly radioactive. No solution to the problem of disposing of the radioactive waste from nuclear fission has ever been found. There are now large amounts of radioactive waste from nuclear reactors stored in temporary storage facilities around the world. These waste products require extremely long times, e.g., tens of thousands of years, to deteriorate into harmless products.

Unless a solution is found to the problem of disposing of nuclear waste, continued use of fission is causing an environmental disaster of large proportions. In fact, because the cost of eliminating the radioactive waste (or storing it for thousands of years) is not known, it is not known whether nuclear fission has an energy yield of greater than one. It may well be the case that the current generation is imposing on future generations an energy cost (for storage of radioactive waste from nuclear fission) that far exceeds the amount of energy that we are obtaining from nuclear fission. Mankind's current generation has clearly discounted the cost to future generations to essentially zero, or it would not use nuclear fission until a method was found for eliminating the radioactive waste.

Of course, this would not be the first time that a human generation has totally disregarded the welfare of future generations. The present generation of human

beings is in the process of depleting all of the world's natural gas and oil, and much of its coal. These fuels are obviously of high value and are irreplaceable – once they are gone they are gone forever. The present generation does not care a whit about the fact that it is denying them to all future generations, forever. The same is true of species that it exterminates. They are gone forever.

The current generation of human beings is in the process of making the planet totally uninhabitable for all future generations. The industrialized human species – economic man – is morally bankrupt. It is ravaging the planet, consuming all of its wealth as rapidly as it can, all in the interest of making a fast buck, regardless of the consequences to other species or even later generations of its own. It is a cancer on the planet, devouring its bounty and beauty, destroying an exquisite balance of nature that has lasted for eons, and leaving in its wake a ravaged planet infected with radioactive and toxic waste, polluted lakes, rivers, and seas, decimated forests, extinguished species, and a poisoned atmosphere.

Another problem associated with nuclear energy is that it produces prodigious amounts of waste heat, which is disposed of in our aquatic systems (rivers and lakes). It is estimated (Pimentel et al.) that a fifteen-fold increase in the number of nuclear power plants in the US would increase the temperature of our aquatic ecosystems by 10 degrees Celsius, with dire consequences for these systems.

The third major problem associated with fission nuclear power is that its longterm use produces large amounts of plutonium, which can be used for making nuclear bombs. This point warrants some discussion. (See <u>The Control of</u> <u>Nuclear Power</u> by David Collingridge for more details.) The two main types of fission reactors are the thermal, or "once-through" reactor, and the fast breeder reactor. We shall first describe the thermal reactor.

The thermal reactor derives its energy from fission of the U235 isotope of uranium. Natural (mined and extracted) uranium consists of .7% U235, which is fissionable, and 99.3% U238, which is not. For use in nuclear reactors, the uranium is "enriched," i.e., it is processed (concentrated) so that it contains 2-3% U235 and 97-98% U238. When the reactor operates, the fissionable U235 decays into lighter atoms. Some of the neutrons produced by the decaying U235 are absorbed by other U235, causing them to split, thereby producing heat (to run steam electricity generators) and more neutrons (to continue the nuclear chain reaction). In addition, some of the neutrons are absorbed by the U238 to produce the Pu239 isotope of plutonium.

As the reactor operates, the U235 decays and forms other products that interfere with the nuclear reaction. It is hence necessary to stop operation of the reactor before all of the U235 is used up. The spent fuel may be removed and discarded (i.e., stored, since it is highly radioactive), or it may be reprocessed back to 2-3% concentration of U235. Whether the spent fuel is discarded (with some U235 still

in it) or reprocessed is a matter of economics. For some reactors reprocessing has been economically worthwhile, whereas for others it has not.

The two main waste products of the thermal reactor are "depleted uranium," U238, and plutonium Pu239. Since thermal reactors convert U235 to U238, after some time all of the available U235 is used up. With current extraction technology, the world's reserves of uranium are sufficient to provide about 100 years of nuclear power using thermal reactors. Clearly, the thermal reactor is not the solution to the industrial world's energy "problem."

The process of enriching uranium produces very large amounts of depleted uranium (U238), and the thermal reaction produces a certain amount of plutonium Pu239. By themselves, these waste products are useless. There is a way, however, that they can be combined with U235 to produce massive amounts of energy. That process is called the fast breeder reactor.

The fast breeder reactor works as follows. First, it is noted that in the thermal reaction it is necessary to slow down the neutrons that are released from decaying U235, in order for them to be absorbed by other U235 atoms (and continue the reaction by causing them in turn to split). The fast neutrons are slowed down by material (such as water or graphite) in the reactor; this material is called a "moderator." The fast breeder reactor does not need a moderator to slow down the neutrons produced by the decaying U235, hence the use of the descriptor "fast." In the fast breeder reactor, some of the fast neutrons are absorbed by atoms of plutonium. This causes them to split, producing heat (for generation of electricity) and more neutrons are absorbed by the depleted uranium, U238, and it is converted to plutonium, Pu239. This created plutonium can in turn be used to fuel other reactors, hence the name "breeder" reactor. (Note that in order to use the created plutonium it is necessary to recycle the spent fuel and separate the plutonium.)

Hence by using fast breeder reactors the large amounts of depleted uranium produced by the enrichment process can be converted into plutonium. Using fast breeder reactors, there is sufficient uranium to produce power for hundreds of thousands of years. As David Collingridge noted, "the breeder is inevitable." It is obvious from man's behavior that he has no intention of living on a "solar energy budget" that can support only a small fraction of the world's current population. As fossil fuels deplete in the next century, it is not imaginable that mankind will choose to use up the available U235 in "once-through" thermal reactors. Soon, mankind will begin to use breeder reactors, big time.

So what's the hitch? The hitch is that whereas it is very difficult and costly to use the fuel of a thermal reactor to make a nuclear bomb, it is relatively easy to make a nuclear bomb from plutonium. To make a nuclear bomb from thermal reactor fuel requires that the fuel be reprocessed into highly enriched uranium (e.g., 20%)
U235), and the enrichment process is costly. The fuel of a breeder reactor – plutonium – can be used directly to make a nuclear bomb. And once the world moves to using fast breeder reactors on a large scale, there will be breeder reactors everywhere. That is, plutonium will be everywhere. And that means that everywhere there is power, there is a ready supply of plutonium for nuclear bombs.

### Some Information about Nuclear Bombs

The publication, <u>The Amount of Plutonium and Highly-Enriched Uranium Needed</u> <u>for Pure Fission Nuclear Weapons</u>, by Thomas B. Cochran and Christopher E. Paine (Natural Resources Defense Council, 1995), provides a table showing the amount of plutonium required to make nuclear bombs of various yields (1-20 kilotons), under various levels of technology. At a low-technology level, from 3 to 6 kg of plutonium is required (3 kg for a 1 kt bomb, 4 kg for a 5 kt bomb, 5 kg for a 10 kt bomb, and 6 kg for a 20 kt bomb). Physically, these are very small quantities – about the size of a baseball.

It is noted that while plutonium is useful for breeder reactors (or nuclear weapons), it extremely radioactive and poisonous. Once breeder reactors are in widespread use, large quantities of plutonium will be produced and be distributed over the globe (at all breeder reactors and reprocessing plants), representing a serious health hazard.

As discussed above, plutonium can be used to make nuclear bombs. Some additional remarks will be made about the kind of nuclear bomb that can be made from a small amount of plutonium. Just as there are two types of nuclear reactors – fusion reactors and fission reactors – there are two types of nuclear bombs: fission bombs, which are often called atomic bombs or atom bombs or Abombs; and fusion bombs, which are often called thermonuclear bombs, or hydrogen bombs, or H-bombs. Atomic bombs are "small." They are the type of bomb dropped on Hiroshima and Nagasaki, Japan, in the second world war; they produce an energy release on the order of 1-20 kilotons (thousand tons) of TNT. H-bombs, on the other hand, can produce massive amounts of energy, e.g., the equivalent of 50 or 100 megatons (million tons) of TNT.

While the construction of an H-bomb is a complex, difficult process, the construction of an atomic bomb is relatively simple. An atomic bomb works by taking two or more lumps of radioactive material and smashing them together into a larger lump whose size and density exceeds what is called a "critical mass." The element continues to exist at densities below the critical mass, undergoing a slow process of "natural" radioactive decay. At densities above the critical mass, however, an "uncontrolled chain reaction" occurs. The products and energy released by some decaying atoms cause other nearby atoms also to decay, and those in turn cause others to decay.

destruction of a large number of atoms, and the release of a massive amount of energy. The release of this massive amount of energy instantly vaporizes the radioactive material, the bomb casing, and anything else nearby (e.g., earth, if the detonation is at or below the Earth's surface), and the result is an "atomic explosion."

Although the building of an atomic bomb was a tremendous feat in the early 1940s, it is no longer difficult technology. Any country or organization with access to properly trained engineers can build one. All it needs is some radioactive material. And there's where breeder reactors become a problem. The fission products of a once-through reactor are not "weapons-grade" products. They cannot easily be used to make an atomic bomb, without reprocessing to "weapons-grade" or "highly-enriched" concentrations (of U235). On the other hand, an atomic bomb can easily be made with about five pounds of plutonium. Such a bomb would be sufficiently small to fit in a suitcase. Although this is a "small" atomic bomb, it is comparable to the ones used against Hiroshima and Nagasaki, and can certainly destroy a large city.

If the world turns to breeder reactors, it will in essence have hundreds or thousands of plutonium factories around the world. In view of the total inability of mankind to get along, it would just be a matter of time until one group or another assembled a few hundred or a few thousand suitcase bombs and proceeded to blow up all of the major cities of the world.

It has been estimated that the world has "lost track" of about 1,500 kg of plutonium. At 5 kg per bomb (to produce a bomb of the size that destroyed Hiroshima), 1500 kg of plutonium is sufficient to produce 300 low-tech nuclear bombs. And the world has hardly begun to use breeder reactors! (Just this month -- May 1999 -- it was revealed that the US has lost track of another 2,000 kg of plutonium.)

In view of the serious problems associated with nuclear fission, it is not regarded as a feasible long-term alternative to fossil fuels as a source of energy. In summary, it would appear that if mankind is going to survive, it is going to have to learn to live on the annual budget of current solar energy. The only feasible alternative – fission nuclear energy – is tantamount to nuclear annihilation.

In view of the fact that solar energy can produce only about 200 quads of energy a year, the carrying capacity of the planet at different standards of living may be readily calculated. Currently the average per capita consumption of energy in the US is equivalent to about 8,000 kilograms of oil. This is referred to as 8,000 kilograms of oil equivalent (koe) or eight (metric) tons of oil equivalent (toe). This is somewhat more than is used by other developed nations. Assuming the somewhat smaller figure of five toe as a reasonable level of an "industrial" standard of living, the number of people who can be supported by 200 quads of solar energy may be calculated. One quad is equivalent to 25.197 billion koe, and so 200 quads is equivalent to 5,039 billion koe. Dividing five thousand billion koe by 5,000 koe per person, we obtain one billion. So about a billion people can be supported on the Earth's annual renewable solar energy resources at a high (industrialized-nation) standard of living, assuming that no other resource limit is reached.

In the very poor countries of the world, the per-capita energy consumption is about 200 koe. At that level, 200 quads of usable solar energy would support about 24 billion people in dire poverty, assuming no other resource limit is reached.

The population projections discussed earlier did not take into account energy constraints. In view of energy limitations, a projection to nine billion people at the middle of the next century implies either that most of them will be living in dire poverty, or much use will be made of nuclear energy.

# Waste Considerations

Prior to the industrial revolution, the planet's ecosystem, while changing somewhat in composition because of the agriculturalization of the world, was in balance. That is, all of the waste generated by each species was used as food by other species. That is no longer true today. Industrial activity produces many "synthetic" products that are not assimilable at all by living creatures. The 8,000 koe per year in energy used on average by each person in the US is used to produce a wide variety of toxic and nonbiodegradable products.

Having an adequate energy supply is just half of the problem. The other half of the problem is what to do about the waste. In the natural ecosystem, energy is obtained from the sun each day, and continuously converted by living creatures into waste that is completely consumed by other living creatures. Mankind, however, uses energy to produce waste that cannot be consumed by living creatures. For industrial man to continue to survive, i.e., to be sustainable, it is necessary (although not sufficient) for him to eliminate all of the waste that his industrial activity produces. Present day man does not do this. He simply dumps most of the waste - toxic, radioactive, or other - into the environment. In order for man to survive in the ecosystem as we know it, it must be the case that all of his waste is reprocessed. Otherwise there is no balance of nature. Biological creatures do not have to worry about reprocessing their waste; evolution and the balance of nature have taken care of that. Industrial creatures such as man must worry very much about this, or they will "soil their nest" and make it unlivable. For every joule of energy that is used by man, he must insure that the waste produced by it is reprocessed (completely).

In order for mankind to continue indefinitely with any level of industrial activity, its production of nonbiodegradable or nonrecyclable waste must stop. Either the

production of nonbiodegradable items must cease, or energy must be expended to transform the industrial products into biodegradable ones. Virtually all industrial products end up as waste, within a few years. This includes all of our appliances, containers, clothes, furniture, cars, buildings, and infrastructure (roads, bridges, power lines, sewage treatment plants). Transforming nonbiodegradable substances into biodegradable ones requires energy, and usually lots of it. In some cases, nonbiodegradable items can be reprocessed and reused, e.g., used aluminum cans into new aluminum cans. In some cases, highly toxic materials must be burned at high temperatures to break them down. Radioactive materials cannot be destroyed (except in a nuclear reaction).

To date, the approach to industrial waste has largely been to ignore it, i.e., to "sweep it under the rug" by transporting to landfills, or by dumping in rivers, lakes, or oceans. This approach is not sustainable, and in fact cannot continue for very long at all at today's high rates of industrial activity. At some point sufficient energy must be expended to convert all industrial waste into useful products or biodegradable products. Data are not readily available on how much energy will be required to do this. If it is (optimistically?) assumed that the same amount of energy is required to dispose of industrial products as was expended to create them in the first place, then the amount of energy required per capita doubles. In this case, the planet's solar energy budget could not support one billion industrial human beings, but only 500 million.

It is quite possible that a significant population of industrial human beings can never be sustained on the planet. Prior to industrial man, all of the plant and animal waste production from the entire solar energy supply was 100% recycled – all of the waste from one species was food for another. Industrial mankind produces waste that is toxic to the ecology, and that is not recycled at all. By relying on energy sources other than solar (such as nuclear), man also generates much more waste than is possible under a "current solar energy budget." At some industrial activity level, the planet's ecosystem will simply be unable to reprocess the industrial waste generated by man on a long-term basis. It is quite conceivable that the planet's ecosystem (as we currently know it) can survive in the long run only as a photosynthetic system on a "current solar energy budget," without massive input of energy (and toxic waste) from other sources. If this is the case, there is no place for industrial man on the planet at all.

### Summary

The message of this chapter is that the large increase in human population over the past 500 years has been made possible by tapping the energy in fossil fuels. When that source of energy disappears in the next century, the human population will either drop right back to the preindustrial levels supported by solar energy (e.g., a few hundred million), or other forms of energy must be found to substitute for fossil fuels. At the present time, fast breeder fission reactors are the only feasible alternative, and they have a serious drawback of producing plutonium, which can readily be used to make atomic bombs.

The basic approach to the energy problem (i.e., the depletion of fossil fuels in a few decades) by the world governments is to ignore it. There is much talk of alternatives to fossil fuels and fission nuclear energy, such as solar energy and fusion energy, but it is just talk. Despite much investment and research, alternative technologies have not been developed. They are in the realm of science fiction or "new age" literature. Isaac Asimov conceived a universe parallel to our own with which energy could be exchanged. Edgar Cayce describes crystal power plants in Atlantis that collected energy from the sun and other sources. Alan F. Alford (<u>Gods of the New Millennium</u>, Hodder and Stoughton, London, 1996) describes pyramid-energy sources in the ancient world. These alternatives are not too promising, to say the least!

Clearly, mankind is facing some difficult decisions. Either reduce global population size to a level that is supportable by the annual budget of solar energy, or use nuclear fission to generate energy, thereby producing long-lasting radioactive waste and the material used to produce nuclear bombs. Since no steps are being taken by world governments to accomplish the former (i.e., a human population of size that can be supported by solar energy), it is pretty clear where we are headed: more people and more nuclear energy.

Human population will continue to expand, and mankind will continue to use nuclear energy and generate nuclear waste. Industrial man will **not** be denied energy, or he will cease to exist. The fact that nuclear reactors generate radioactive waste and waste heat will not deter mankind in the least from using them. But the fact that the most promising type of nuclear reactor – the fast breeder reactor – generates large amounts of plutonium will have a significant impact on man's future. The availability of large amounts of plutonium significantly increases the likelihood of nuclear war.

# IX. The Role of Economics

Previous chapters have alluded to the role of economics in affecting populationrelated decisions. This chapter discusses this role in further detail. This additional discussion of economics will serve as reference for later chapters.

The dictionary (Merriam Webster) definition of economics is "of, or relating to, or based on the production, distribution, and consumption of goods and services." According to this definition, economic activity exists in every society, even the hunter-gatherer society, where decisions are made about who collects the food and how it is shared.

Economic activity became a significant aspect of man's activity with the advent of agriculture. With agriculture, mankind developed the ability to produce a substantial food surplus, so that a portion of the population could reside in cities and pursue nonagricultural activities. These activities included development of commerce, law, the arts, medicine, science, and industry. The agricultural surplus enabled the support of large armies and thence to the creation of the world's many civilizations.

A word of warning is noted here. The social and economic implications of depleted energy sources, unsustainable population growth, and nuclear threat may be, for some, uncomfortable to discuss. I will discuss topics like slavery, which has disappeared in today's high-energy environment but will return in a low-energy environment. I will discuss these subjects frankly, unconstrained by today's "political correctness." I discuss them not because of a preconceived bias, but because history and reason point to them, and they are too important to ignore, soften, or lie about. Some readers may be offended by what I have to say, but please hear me out, and consider my arguments. What I am talking about could happen to you!

#### Economics and Slavery

The agricultural revolution led naturally to human slavery. In a hunter-gatherer mode, it is not practical to keep slaves. Defeated enemies are simply killed. In preindustrial agriculture, however, there is a large demand for slaves for labor, and the social organization exists to maintain slavery as a system. Compare the absence of slavery in the nomadic hunter-gatherer North American Indian tribes to the significant slavery of the agricultural Central and South American Indian tribes.

Slavery did not exist because our forefathers were less ethical or religious than we. On the contrary, they were far more religious than we are. Slavery existed because of a strong demand for energy, and it continued on a global scale until

the development of technology and fossil fuels presented an alternative source of energy. Whether slavery exists has nothing to do with religion or ethics. Take away today's access to energy, and human slavery will return as quickly as it was replaced. Whether slavery thrives is determined by economics, not ethics.

Because of the fascination of American sociologists with the topic, many books have been written about slavery. Some of them are the following:

- 1. <u>Slavery: A World History</u>, by Milton Meltzer, Da Capo Press, 1993
- 2. The Making of New World Slavery, by Robin Blackburn, Verso, 1997
- 3. <u>African Slavery in Latin America and the Caribbean</u>, Herbert S. Klein, Oxford University Press, 1986

These books discuss the economic motivation for slavery.

# Economics and Population Growth

Economics is a main force underlying population growth. Because of man's greed, he is constantly striving for more...more of everything. More material possessions, more power, more knowledge, more security, more comfort, better health, longer life, more variety, more freedom. As mentioned earlier, the standard measure of material well-being is the gross domestic product per capita. Recently, a number of other indicators of well-being have received attention, such as the UNDP's Human Development Index, but these additional indicators are strictly "second string" measures of standard of living. The indicator that matters to the people in charge – politicians and industrialists – is the gross domestic product.

Many people have a serious misconception about the relationship of population size to economic well being. They assume that the finiteness of resources implies that, now that the world is populated everywhere, if the population increases then the standard of living must decrease. This conclusion must hold "in the limit," since there is obviously **some** limit to the amount of industrial activity that the planet can support and still continue to function biologically. The fact is, however, that whenever a limitation has been reached on one resource, technological innovation has invariably found a way to overcome that limitation by means of a substitution of a limited resource for a less limited one. While this substitution of resources will not enable human population to grow without limit, it has certainly worked for a long time.

Julian Simon discusses this concept at length in many of his books on the subject (e.g., <u>Population Matters</u>, <u>The Ultimate Resource 2</u>, and <u>The State of Humanity</u>). If copper is in short supply, then fiber optics is invented. If oil runs out then breeder reactors will be used. If salmon are exterminated then bean curd can be used. If black rhinos are exterminated then white rhino horns can be

used for Yemeni dagger handles. If white rhinos are exterminated then wood can be used. From an economic perspective, all that matters is market value, cost per unit, and economic output. When one resource is depleted or destroyed, just find a different way of doing things, or do something else. Everything is expendable, everything is replaceable. All that matters is economic output and economic efficiency. Economics über Alles.

Because of technical innovation, the standard of living has improved year after year for many people. There are more wealthy people on the planet than ever before. Many ordinary people in the developed world live in far greater comfort than the kings of previous times. On the other hand, there are now about four billion people on the planet who are living in direst poverty, but that is of little concern to economists. World wide, both the total gross domestic product (GDP) and the gross domestic product per capita continue to increase. (The gross domestic product is the total value of all goods and services produced – money changing hands – in a country in a year. The earnings of multinational operations are attributed to the country in which the goods and services are produced. The gross national product (GNP) was used rather than the GDP until 1991. For the GNP, the earnings of multinational firms are attributed to the country in which the firm is owned.)

The fact is, contrary to what many people believe, increasing the population size (up to a point) does not necessarily lead to a lower standard of living. Because of increased opportunities for specialization, it may actually lead (and often has led) to an increase in the standard of living, as measured by GDP (or GNP).

The people in charge – politicians and industrialists – want to increase both GDP and GDP per capita. A country with twice the economic output per capita as another country having the same population is twice as rich, and probably twice as powerful. A country with twice the population as another country having the same GDP per capita is probably twice as powerful in the world community, and probably has twice as many millionaires. If the US population doubles from 150 million to 300 million, Microsoft can sell twice as many copies of its Windows operating system, and reap twice the profits. If the GDP per capita of the US doubles, the number of households that can afford computers could easily double, and Microsoft sales would double as well. If the world population doubles from six to twelve billion, the world will need twice as many basic necessities such as pots, pans, fans, and air conditioners. This translates into twice as much economic activity, twice as many industrial jobs, twice as much earnings, twice as much profits.

Some time ago Malaysia announced the intention of quadrupling its population from twenty million to eighty million people. As the Bible says, "A large population is a king's glory, but without subjects a prince is ruined." (Prov. 14:28). The rationale for this desire is the perception that a Malaysia with four times as many people is four times as wealthy, four times as powerful.

### Economics versus Ecology

So what is wrong with this picture? Who is against high standards of living? What is wrong is that the attention of the people in charge (politicians, industrialists) is centered on the promotion of economic growth irrespective of the damage to the planet's ecology. Millions of species live in the world's tropical forests. While it is not really known how many species are eliminated for each hectare that is burned, it is obvious that if all of the tropical forests are destroyed, then all of the resident species are gone forever. And that is exactly what is happening.

So long as human population grows and economic activity increases, the material wealth of those in charge will increase, both in absolute and per capita terms. Because of man's greed, the planet's political and industrial leaders will never promote a policy of lower population or lower economic activity. Both will continue to increase, and nature will continue to be destroyed. This fact is obvious from all of human history.

Why, one might ask, will the world's leaders not put a stop, or at least discuss putting a stop, to economic growth, when there is the potential for disaster – not just the loss of many other species, but the very real possibility of the complete destruction of their own nations and the human race? It is not totally clear. One factor is the "discounting in time and space" mentioned earlier: the disaster will probably fall on the next generation, not on ours, and so we do not need to worry about it. I believe that this is an important factor, because of the almost universal response I have gotten from people when I told them the subject of this book. A laugh, and a remark similar to, "Oh, I probably won't be alive then anyway."

Another factor is that people are willing to kill for economic benefit, but not for environmental benefits. Countries will go to war, sacrificing the lives of millions, for the prospect of economic gain. And they will go to war to defend themselves from enslavement. Similarly, individuals and groups will commit murder for economic gain. But no one, it appears, it willing to kill to protect other species, or even the next generation of the human species.

General George S. Patton remarked that wars were not won because some poor bastard was willing to die for his country. Instead, he said that wars were won because some poor bastard was willing to make some **other** poor bastard die for **his** country! In other words, wars are not won by people being willing to lay down their lives; they must be willing to kill. The relevance of this observation with respect to environment or ecology is that no one is willing to kill to protect them. To be sure, a few brave souls, such as the early Greenpeace activists, were willing to lay their lives on the line to protect whales, by physically placing their rafts in front of whaling boats. And a few dedicated environmentalists have risked their lives attempting to protect giant redwood trees in California or lynx habitat in Colorado. These people are willing to sacrifice their lives for the environment, but not their mortal souls (by killing for the environment).

Why is no one nation or group or individual willing to kill to save the environment? That a nation is unwilling to do so is not unremarkable. First, nations are committed to growth; second, even if a particular nation were not, it would lose the war, since all other nations are committed to growth. But why is no organization or individual willing to kill to save nature? That they would probably be defeated is not the answer, because terrorist groups operate every day in support of other causes (namely, the economic development of a specialinterest group), however futile. It's not because no one believes that the environment is being damaged by human activity – many people do. Part of the answer is no doubt religious. Most people believe that killing another human being would place their mortal souls in jeopardy. They might do it in a fit of passion, or under orders (e.g., police, soldiers, executioners), or in a "holy war." But few people are willing to do so for other reasons, even if they believe that their actions might save the lives of billions in the future. Killing one other person can sentence you to death and doom your soul to Hell for eternity; allowing all the billions of human beings and other creatures to die in a sweltering greenhouse Earth evidently carries no penalty.

Ultimately, the choice between saving the tigers and not saving the tigers is the choice whether a three-year-old Bangladeshi child lives or dies. And no one, it seems, is willing to sacrifice a single human life, or his own soul, for all of the tigers, all of the rhinos, all of the pandas, or all of the whales in the world.

Until recently, there was one section of Bangladesh that was not heavily overpopulated – the Chittagong Hill Tracts, near Burma. The rest of the country was settled by Bengalis. The Chittagong Hill Tracts were settled by other ethnic (tribal) groups (nonBengali peoples, related to Burmese tribes). So what did the Bangladesh government do? Did it take steps to keep the population density low in the one area that was lower? No way! Instead, it sent in half a million Bengali settlers into the Chittagong Hill Tracts, just as the Chinese did in Tibet. The population of Bangladesh is 120 million people, crammed into a country the size of Wisconsin. The population is growing by a couple of million a year. Did sending the half million Bengalis into the Chittagong Hill Tracts solve anything? No – a few months later the population in the rest of the country was just as high as it was before, and the Chittagong Hill Tracts are now ruined as well. All of this despite the presence of an "environmental impact" section in the country's fiveyear development plan.

Mankind's greed knows no limits; nothing is sacred. Mankind will sacrifice nature in a minute to make a profit. It is easy to understand why a desperately poor father will kill the last wild animal or cut down the last remaining rain forest, to feed his family. But greedy entrepreneurs will do this in a heartbeat, just to make a quick buck. In my previous home of North Carolina, for example, hog production has recently been introduced on a massive industrial scale. Where once were small farmers raising a few hogs, there are now gigantic hog factories, selling hogs to the world. Outside these hog factories are giant cesspools (euphemistically called "lagoons") filled with hog excrement. Periodically, the lagoons rupture, killing all life in the streams that are choked with this rotting sewage. The stench near these industrial "farms" is overpowering.

Does America need these hog farms? Absolutely not. America's demand for hogs could easily be filled by the previous low-intensity pig-raising methods. But with hog factories, it is possible to make big profits by selling hogs cheaply around the world. Economic efficiency dictates that since hogs can be raised more cheaply in industrial farms, that's what should be done. The loss of nature and the stench are just "externalities" that are of no consequence. With industrial agricultural production methods such as these, it may be possible to support a population of one or two billion people in the US, not just a meager 272 million. The fact that the environment is being ruined by the industrial hog farms is of no consequence to the greedy men who will eagerly trade a pastoral North Carolina for stinking hog-excrement lagoons, just to make more money.

I recently returned from a business trip to Botswana. This land is a paradise of wildlife. Unfortunately, the human population is soaring – a population growth rate of 2.05% in 1996. At this rate, the current (1996) population of 1,480,000 will double in just 34 years. Botswana's fragile ecology cannot take this massive increase in human population. So what is being done? Just as the US, Botswana is plundering its natural resources for export earnings. Its major export commodities are diamonds and beef. Every cow that is raised in Botswana displaces a similar wild creature, such as a kudu, bushbuck, zebra, giraffe, gemsbok, wildebeest, or buffalo. The cattle population is now 2.6 million; many are exported for money. A kudu in the wild is a magnificent sight; it is of no value, however, compared to the money earned by using its habitat to raise beef for export. Botswana, as many other countries, is in the process of selling off its natural assets – it is eating its "seed grain." But what will happen when all of the diamonds are gone, and all of the coal is gone, and all of the kudus are gone?

### Economics and Ethics

The late Ernst Friedrich ("Fritz") Schumacher understood the nature of economics. He wrote three books, <u>Small Is Beautiful</u>, <u>A Guide for the Perplexed</u>, and <u>Good Work</u>. He pointed out that economics ignores man's dependence on the natural world, and he described a system of social organization that promotes a humane and sustainable relationship of man to nature. This system, which he referred to as "technology with a human face" (or "economics as if people mattered") involves the use of low-cost methods and equipment in small-scale systems. He believed that universal prosperity cannot be accepted as the

foundation for peace, because, if it is achievable at all, is attainable only by cultivating greed and envy, which destroy happiness and peace. He observed that economies of scale have transformed the world's beautiful pre-industrial cities into massive slums filled with human misery, crime, alienation, stress, and social breakdown. Increasing city size has led to enormous problems and human degradation.

Schumacher listed four main characteristics of modern industrial society:

- 1. Its vastly complicated nature
- 2. Its continuous stimulation of, and reliance on, the deadly sins of greed, envy, and avarice
- 3. Its destruction of the content and dignity of most forms of work
- 4. Its authoritarian character, owing to organization in excessively large units.

He criticized the ever-intensified idolatry of getting rich quickly. He cited the unsurpassable ugliness of industrial society – "the mother of the bomb." He stressed the need to move toward "an harmonious cooperation with nature rather than a warfare against nature; towards the noiseless, low-energy, elegant, and economical solutions normally applied in nature rather than the noisy, high-energy, brutal, wasteful, and clumsy solutions of our present-day sciences."

Schumacher quoted Ghandi, "Earth provides enough to satisfy every man's need, but not for every man's greed." He noted that growth has become the keynote of economics all over the world. He quoted Professor Walter Heller, former Chairman of the U. S. President's Council of Economic Advisers, "I cannot conceive of a successful economy without growth."

Observing that civilized man has despoiled most of the lands he has occupied for long, he cited the quotation, "civilized man has marched across the face of the Earth and left a desert in his footprints."

"How did civilized man despoil this favorable environment? He did it mainly by depleting or destroying the natural resources. He cut down or burned most of the usable timber from forested hillsides and valleys. He overgrazed and denuded the grasslands that fed his livestock. He killed most of the wildlife and much of the fish and other water life. He permitted erosion to rob his farmland of its productive topsoil. He allowed eroded soil to clog the streams and fill his reservoirs, irrigation canals, and harbors with silt. In many cases, he used and wasted most of the easily mined minerals and other needed minerals. Then his civilization declined amidst the despoilation of his own creation or he moved on to new land. There have been from ten to thirty different civilizations that have followed this road to ruin."

The only difference this time is that there is no where else to go. Modern man has filled the planet to the brim with human beings, and when he finishes off the land this time, he will have soiled the nest for all mankind for all time.

In 1981 the US National Research Council published a very interesting book (now out of print) entitled, <u>Food, Fuel and Fertilizer from Organic Wastes</u>. It describes small, sustainable systems of human living that produce sufficient food and fuel for human activity and recycle all of their waste. It is quite feasible for man to live in harmony with the planet's ecology, but he has not chosen to do so.

As Eugene Rabinowitch, editor-in-chief of the <u>Bulletin of the Atomic Scientists</u>, observed, "...there is no convincing proof that mankind could not survive even as the only animal species on Earth." But is it right to do this?

Schumacher was a Christian, and he addressed this issue from a Christian viewpoint. He quoted the Bible, "And he also gave man dominion over the fish in the sea and the fowl in the air, and over every living being that moves upon the Earth." He stated that man was given "dominion," not the right to tyrannize, to ruin, or exterminate. He stated that for man to put himself in a wrongful relationship with animals has always been a horrible and infinitely dangerous thing to do. He cited Proverbs, in which it is written that the just man takes care of his beast, but the heart of the wicked is merciless. He observed that modern economics does not distinguish between the renewable and the nonrenewable, recognizing only differences in relative cost per "equivalent" unit. From the viewpoint of economics, the vanishing Florida panther is of no more significance than a common house cat.

Not a great deal has been written on the subject of morality and ecology. A major argument for saving the tropical forests is to preserve their biodiversity to save the unknown species that might hold a secret cure for mankind's diseases, such as cancer. This point of view is not a moral point of view: it is based on selfishness and greed.

Many books discuss the ethics of the human population explosion and concomitant extinction of other species. In addition to Schumacher's books, these include Farley Mowat's <u>Rescue the Earth!</u>, Wendell Berry's <u>What Are People For?</u>, John Leslie's <u>The Science and Ethics of Human Extinction</u>, and William G. Hollingsworth's <u>Ending the Explosion: Population Policies and Ethics for a Humane Future</u>.

The only book I own that is dedicated to ecology and religion is <u>Ecology and</u> <u>Religion in History</u>, edited by David and Eileen Spring (1974). Arnold Toynbee has a chapter in this book, entitled, "The Religious Background of the Present Environmental Crisis" (reprinted from a 1972 article). He discussed the relationships among God, man, and nature under the monotheistic religions in general and Christianity in particular. Toynbee observed that Christian doctrine toward nature is summed up in the Bible verse, "Be fruitful and multiply and replenish the Earth and subdue it" (Gen. 1:28). Adam and Eve were given license to do as they wished with Earth, a license to occupy natural habitat and replace its wild species, a license to use up all fossil fuels and remove all valuable minerals from the Earth, a license to overpopulate, a license to pollute, a license to create industrial toxic and radioactive waste. He also observed, in closing, that "The injunction to 'subdue,' which modern man has taken as his directive, is surely immoral, impractical, and disastrous."

Rev. Mark W. Bergman pointed out to me that the assignment given by God to man to subdue the Earth took place in the "perfect" or "holy" environment in which Adam and Eve had not yet sinned. Man was offered dominion over the living creatures of Earth prior to the Fall and his banishment from the Garden of Eden.

This chapter has been about economics. Economics is the driving force that has corrupted mankind and is destroying the planet. Economics – the dismal science. As mathematician John Maynard Keynes observed (in his 1930 essay, "Economic Possibilities for our Grandchildren") the fatal limitations of economics as a long-term basis for human society:

"Some day we may return to some of the most sure and certain principles of religion and traditional virtue – that avarice is a vice, that the extraction of usury is a misdemeanor, and the love of money is detestable. But beware! The time for all this is not yet. For at least another hundred years we must pretend to ourselves and to every one that fair is foul and foul is fair; for foul is useful and fair is not. Avarice and usury and precaution must be our gods for a little while longer."

In the long run, as Keynes noted, we are all dead. In the long run, our sun runs out of fuel and the biological life of our solar system dies. In the long run, it does not matter a whit whether you do take a stand to protect your family, your culture, your nation. As the Teacher in Ecclesiastes states, "All is meaningless!" In the short run, however, things <u>do</u> matter. Life is not without meaning and purpose, but you must define the meaning and purpose. Your life will be defined by the stands that you take. As Shakespeare said, "All the world's a stage, and all the men and women merely players." This planet can support human society and nature for a few more years, or it can support human society and nature for several billion years more. The choice is ours.

Economics cares nothing about the environment, ecology, biodiversity, or quality, or culture, unless you can put a price tag on them. All that matters is economic efficiency and output. If increased immigration will boost GDP, then the economist will promote it, even if it destroys the environment and our culture. It

does not matter that our environment is destroyed by immigration as long as economic activity continues. The environment is nothing more than an externality. If other species can be used as food or medicines or instruments of pleasure (e.g., ecotourism), then economics places a dollar value on them; otherwise they are nothing more than externalities.

Culture means nothing to economics. Unless it can be bought and sold for a price, culture is nothing more than an "externality." One of the most repeated arguments in favor of racial integration in US business was the "it is good for business." To justify either segregation or integration on the basis of its economic payoff is grossly venal – a completely immoral approach.

Quality means nothing to economics. When I was young, all of the furniture I bought was solid walnut. After a while, most of the world's walnut was gone, and it was necessary to switch to solid cherry. Then solid mahogany. Then solid oak. Now, most furniture is not solid at all, but veneer and composition. This does not matter to economics. All that matters is the function and price of the item, not its quality.

The US was once sufficient in wood production. Because of massive immigration, it no longer is. More than 90% of its forests have been logged at least once. A couple of years ago I lived in Charlotte, North Carolina. At that time, plans were in the offing to build a large lumber mill in western North Carolina that would harvest every privately owned hardwood tree within a hundred miles. Economics is concerned only with form, function, and fit. It is concerned only with the monetary value of things, not with intrinsic value or quality or morality.

On a business trip to Dhaka, Bangladesh a few months ago, I had breakfast with a professor of agronomy from Georgia. He told me that the price of lumber has risen so much in the United States that Georgia farmers are now replacing food crops with tree farms. In fact, it is so lucrative that the lumber firms can pay the farmer what he would have made in farming every year until the trees can be harvested. Immigration is directly responsible for our loss of self-sufficiency in wood.

When I was young, it was still possible to enjoy wild nature near many towns. The population was stable. It was still possible to own a place on a lake or river or beach, without destroying natural habitat – when someone else died, you could buy his place. Now, only the wealthy can afford lake homes and beach homes. And they are not buying old homes as old people die – they are destroying beaches and lakeshores and riverbanks and wetlands to build <u>new</u> homes. Because of massive immigration and development over the past 50 years, Americans have much less access to nature than they had before (since there are twice as many of them on the same size land). National and state parks are now in essence little more than crowded ecotourist theme parks.

Twice as much natural land and farmland has been permanently destroyed to make room for human houses and infrastructure. Does this matter to economics? Not in any negative sense. From the economic viewpoint, it is a good thing, because it has contributed to economic activity. Lakefront and beachfront property that was of no monetary value a hundred years ago is now priced out of reach of most people. To economics, that is a tremendous advance: economic value has been created where none existed. The loss of nature is of no consequence.

Russell Mettermeier (President of Conservation International) and Peter Seligman (CI's founder and CEO) know what the score is. In the article, "Earth's Green Gown: Russell Mittermeier Into the Woods" in the December 14, 1998 issue of Time, Mittermeier is quoted: "I could argue for the economic value of preservation – the biotechnology that leads to the discovery of medicines and so forth, but if you push me to the wall, I'm for zero deforestation, zero extinction. I believe that we have a moral obligation to other species. The only real reason for saving them is that it is right." We must make a choice between economic development and nature. They are diametrically opposed. We cannot have both.

The ecologist may view the extermination of a species as the permanent, tragic loss of a nonrenewable resource. To the economist, this loss is of no consequence, since a substitute can always be found. In fact, if the substitute costs more, then that is great – GDP will increase even more!

The environmental movement is doomed to failure. It has failed for the past century, and it will continue to fail. Environmentalists may continue to wring their hands over the destruction of the planet's ecology, and continue to point out the folly of continued industrial activity. But absolutely nothing is going to result from their anguish and pleas. In the battle between economics and ecology, ecology will lose (in the short run).

Human population **will** continue to grow, and industrial activity **will** increase, and the environment **will** continue to be destroyed. The laws of economics require this.

## X. What Size Should the Human Population Be?

The preceding chapters show that, under current conditions, human population and industrial activity will likely continue to grow without limit for as long as possible. Neither will stop unless some external factor, until now not operative, comes into play.

An earlier chapter addressed the issue of carrying capacity, and showed that the answer to the question, "What size should the human population be?" may vary widely, depending on what criteria are imposed. This chapter addresses this same question, but from a viewpoint that differs somewhat from those used before.

This chapter introduces some technical terms and concepts from the field of game theory and statistical decision theory. If you do not follow the details of the technical discussion that follows, do not be overly concerned. Basically, the thesis of this chapter is that in choosing among alternative population strategies, it is preferable to select the one that minimizes the worst that can happen, i.e., that minimizes the chance of human extinction (and planetary destruction). This approach is quite different from other approaches to population policy, that attempt to maximize human welfare or numbers with little or no regard for long-term consequences. In contrast to current population policies of all nations and major international organizations, the proposed approach is conservative and risk-averse, rather than risk-ignorant and reckless.

If you really dislike technical details, just skip the several paragraphs of the section that follows. Ordinarily, I would have placed technical material such as this in an appendix, but it is fundamental to the philosophical approach ("minimal regret") to population policy that is introduced in this book, and I felt that it should be a part of the main text.

### Statistical Decision Theory and Game Theory

In mathematical terminology, the problem of determining what size the human population should be may be formulated as a "decision problem under uncertainty," and much mathematical theory was developed about 50 years ago to solve this type of problem. The approach used in this chapter is to adopt a decision criterion which we shall refer to as the criterion of "minimal regret." Under this criterion, a population size will be selected that, in some sense, minimizes the likelihood of a planetary catastrophe, while keeping the probability of survival of all species – human or otherwise – at a high level.

The approach used in this chapter is motivated by the decision-theoretic criterion of "minimax regret" (or minimax loss or minimax risk). This section will present a

little background on decision-theoretic concepts, as motivation for the proposed approach. For additional details on decision theory, see <u>Theory of Games and Statistical Decisions</u> by David Blackwell and M. A. Girshick for details on decision theory. See <u>Games and Decisions</u> by R. Duncan Luce and Howard Raiffa for a less technical presentation. See also Abraham Wald, <u>Statistical Decision</u> <u>Functions</u>, and Leonard J. Savage, <u>The Foundations of Statistics</u>, and <u>Theory of Games and Economic Behavior</u> by John von Neumann and Oskar Morganstern.

In simple terms, a decision problem is specified by a set of states of nature (or states of the world), a set of decisions, a function that specifies the loss (or gain) that results for each possible combination of decision and state of nature, and a decision criterion, or decision rule. The loss function (gain function) is also called the objective function or the payoff function. A "decision problem under uncertainty" is a decision problem in which the state of nature is not known, although the decision-maker may have some information about the state of nature.

The decision-maker may have the opportunity to make a single decision (e.g., deciding on a population policy that may end the world), or he may get to make decisions many times (e.g., deciding which stock to buy each day). Each time he makes a decision, the outcome is specified by the loss function (or gain function).

(A decision problem under uncertainty is similar to a mathematical game. In a mathematical game, there are two or more players, each of whom may make a decision (move, action, play). A decision problem under uncertainty is similar to a two-person game in which the opponent's decision corresponds to the "state of nature" (of the decision-under-uncertainty problem). In a game, each player makes a decision according to some decision criterion that reflects his interests. The principal difference between a decision problem and a game is that in a game the opponent's objectives are often opposed to the player's objectives (e.g., as in a zero-sum game), whereas in a decision problem under uncertainty this is not the case, since "nature" is considered to be neutral, and not against the decisionmaker. The problem of determining a strategy for planet Earth could be formulated as a mathematical game, but that approach is beyond the scope of this book. Formulating it as a decision problem under uncertainty is simpler, and illustrates the approach adequately.)

A "decision criterion," or "principle of choice," is a rule specifying what strategy a decision-maker should select to solve a decision problem under uncertainty. The decision criterion specifies the basis on which the decision-maker makes his decision, e.g., to attempt to minimize the loss. There are a number of standard decision criteria that have been used in the past, and the most important of these will be described in the following paragraphs.

A widely used decision criterion is the minimax criterion, under which the decision-maker chooses the strategy that minimizes the maximum loss that may

occur. (It is also called the maximin strategy, which is the strategy that maximizes the minimum expected payoff, or gain, or "utility;" the payoff (or gain) is the negative of the loss. The term minimax is a contraction of the Latin, minumum maximorum, which means "minimum of the maximum.")

Another popular principle of choice is Bayes' principle, under which the decisionmaker chooses the strategy that maximizes the expected gain, where he assigns subjective probabilities to the various unknown states of nature. This principle is a reasonable one if the decision-maker gets to make the decision many times (e.g., as in buying a stock).

A third principle of choice is the minimax-regret criterion. Under the minimaxregret criterion, the decision-maker minimizes the maximum "regret." For each specified decision choice and state of nature, the "regret" is defined as the difference between the maximum gain the decision-maker can realize under that state of nature (using the best decision) and the gain for the specified decision choice and that state of nature. In other words, the regret (for a given state of nature and decision) is the additional amount that the decision-maker would have gained had he made the best decision rather than the decision that he actually made. The minimax-regret decision is the decision for which maximum regret (over all states of nature) is a minimum. (Note that regret is different from loss. Loss is the negative of the gain, or payoff, or utility. Regret is a **difference** in utilities, or losses.)

Under certain circumstances, the minimax and the minimax-regret decision criteria produce identical results (i.e., the same decision). In many cases both criteria produce reasonable results (decisions), but scenarios can be constructed in which either criterion has drawbacks. The mimimax-regret approach has been criticized because a difference in utility (which the regret is defined to be) may not necessarily correspond to what we generally call "regret" or "risk." Both criteria are appropriate in a "risk averse" setting, where one or more of the states of nature may produce catastrophic loss, and it is desired very much to avoid this catastrophe, i.e., to minimize the maximum loss (or regret) that can occur. This situation is very much the case for the problem of overpopulation and industrialization, where continuing on the current course may well result in total annihilation of the biosphere. A Bayesian approach (minimizing the expected loss) is not considered appropriate here, because some of the possible outcomes are catastrophic – "the variance can kill you." Working with expected values (means) is not considered appropriate in the present context (in which some of mankind's decisions may lead to destruction of all life), since we may only get to play this game one time.

# Decision Theory Applied to Population Policy Analysis: The Criterion of Minimal Regret

Population policies that attempt to maximize the number of human beings on the planet, or maximize their welfare, (at a point in time) have the tremendous drawback that they increase the likelihood of biosphere destruction (and hence human extinction). The "minimal-regret" strategy introduced in this book takes the point of view of minimizing the maximum loss (biosphere destruction). This approach is radically different from approaches that attempt to maximize human numbers or welfare. The emphasis of a minimal-regret strategy is on avoiding catastrophe (i.e., to minimize the worst that may happen), not on maximizing economic production or human pleasure.

In this book, no attempt will be made to formulate the problem of determining population size in well-defined mathematical terms. A major difference in the approach presented here and conventional theory is that no attempt is made to represent the outcome of the decision problem by a single number (the loss or gain). That is, it is recognized that the outcome of mankind's choice for the planet is multidimensional -- it involves all sorts of variables, such as the numbers of human beings, the quality of life, the level of biodiversity, risks of extinction, who rules, religion, morality, culture, value systems, the relative value of the current generation compared to future generations, the relative value of human beings compared to other life forms, and so on. The theory of decision problems involving multidimensional utility functions is not well developed, and is of little help here.

Instead of a rigid mathematical formulation, a set of criteria will be specified, and a solution will be identified that satisfies those criteria. Since the approach is similar in concept to the minimax and minimax-regret approaches of statistical decision theory, but without the mathematical formalism or a single-valued utility function, the approach will be referred to as a "minimal-regret" solution (i.e., we shall use a slightly different name). Just as the minimax and minimax-regret criteria produce decisions that minimize the maximum loss or regret, the approach presented in this chapter attempts to minimize the chance that the human species will destroy the planet (as we know it).

The criterion of "minimal regret" specifies that if one of several different possible decisions (courses of action) must be made, then select the one that, no matter what happens, the "regret" is least. "Regret" is loosely defined as the likelihood that mankind and the planet's biodiversity are destroyed. This approach may result in a result quite different from the usual approach of determining optimal population size. The objective in determining the optimal population size is to identify the largest possible population that can achieve a particular lifestyle, with the constraint that it be "sustainable," i.e., not cause so much damage to the environment that it cannot continue indefinitely.

The very serious drawback of the optimal-population-size approach is that it does not address the issue of how much stress the environment can sustain without collapsing. It is simply hypothesized that, if there is sufficient solar or nuclear energy and land to support one billion people, that the environment can "take it," and will "take it" indefinitely. If the environment cannot "take it," the whole human race is destroyed. From the viewpoint of long-term survival of the human race, this is an incredibly absurd approach.

The approach of determining optimal population size is an attempt to maximize the number of human beings on the planet, while completely ignoring the possibility that mankind's economic activity may destroy all life on the planet. It is a horribly flawed approach in which a major possibility – global destruction – is permitted. The possibility of planetary destruction is willfully recognized and accepted, and conspiratorially ignored. In contrast, the minimal-regret approach addresses the issue of planetary destruction head on, and takes it fully into account.

As described above, the minimal-regret approach to determining a global population strategy is a general framework for determining a strategy, but it has not been fully specified since the "loss function" or "objective function" has not been specified (except for the general reference to a loss of biodiversity). All that has been specified to this point is the decision criterion (minimal regret). No specification has been made as to exactly what is being maximized or minimized (i.e., the objective function). The approach cannot be implemented until goals or objectives are defined more precisely. In other words, it is not possible to determine a strategy until we have specified what goal it is that we wish to accomplish.

And there's the rub! The major difficulty in determining a global population strategy and an answer to the question, "How many people should there be on planet Earth?" is that of deciding on the goal, or purpose, of human existence. If the purpose of human existence is to maximize the number of converts to Catholicism (or any other religion) in the twentieth century, then the current defacto global population strategy of maximizing the total number of human beings regardless of damage to the planet's other species or the long-term survival of the human species is appropriate. If the purpose of human existence is to glorify God by leading good lives and husbanding the planet, then the current approach is absurd. If there is no purpose to human existence, then it does not matter what the global population strategy is. In order to determine a population strategy, it is first necessary to address the value-laden question of "What people are for?". The Hebrew Torah, Christian Bible, and Islamic Koran (Quran, Qur'an, Qur'aan) shed little light on this. A basic mandate of all three religions is to honor God and treat your neighbors with respect (war excepted). The Book of Ecclesiastes teaches that all human activity is meaningless, and all that matters is to obey the Commandments. Although man was authorized (before the Fall) to "be fruitful, multiply, and subdue the Earth," there is no mandate that the goal

of mankind is to maximize the number of people on the planet, or to maximize the standard of living for human beings. On the contrary, it is stated that it is easier for a camel to pass through the eye of a needle than for a rich man to enter heaven.

While there is no guidance on whether mankind should attempt to maximize human population, there is the strong suggestion that destroying the Earth is not desired. The Book of Revelation states that those who destroy the Earth shall be destroyed.

This book will adopt the viewpoint that the primary, or basic, purpose of mankind is twofold: to preserve its long-term survival, and to allow the planet's balance of nature to continue much as it has in the current geological age, i.e., to not destroy the biosphere in which mankind evolved. There may be a higher purpose for mankind, e.g., to achieve Nirvana or salvation. The adopted approach does not preclude those higher goals, but it does address the fact that if the planet is destroyed, then the achievement of those higher goals may be impossible. The adopted approach may be viewed as an attempt to identify and achieve basic goals (such as survival) that are necessary to (although not sufficient for) the achievement of higher goals. The larger issue of what particular higher goals are achieved by mankind over future history (e.g., the victory of Christendom over Islam, or of Islam over Christendom, or of democracy over other governmental forms, or the elimination of poverty or war or disease, or travel to other planets in the Galaxy) is not addressed here. The goal of the global population strategy is simply to ensure that mankind and the current biosphere have a future. What is done with that future is another issue, and not addressed in this book.

To this end, let us consider the following criteria for (goals as a basis for) determining human population size:

- 1. The probability of long-term survival of the human race is maintained very high (i.e., in some sense maximized).
- 2. Damage to the planet's environment and ecology from human activity is kept very low (i.e., in some sense minimized).

The qualifiers "in some sense" are used because it is recognized that the planet's ecology is very complex, and it is just about impossible to maximize or minimize any aspect of it, short of totally destroying the planet's ecology or totally eliminating mankind.

The essential difference in the minimal-regret approach and other approaches that have been considered or proposed is that there is no attempt to maximize the human population size. Emphasis is instead on long-term survival of the

human race and the planet's ecology (i.e., of all other species), regardless of the size of the human population.

The "minimal-regret" approach differs significantly from the "minimum-populationsize" approach (mentioned earlier in the chapter on carrying capacity), which was concerned with determining the minimum-sized population that could enjoy a high standard of living indefinitely. With the minimal-regret approach there is no attempt to maximize **either** the number of human beings **or** the human standard of living. The emphasis is on maximizing the likelihood of long-term survival of the human race and preserving the planet's natural environment, not on the hedonistic goals of maximizing man's pleasure or number.

The minimal-regret approach also differs significantly from the "optimalpopulation-size" approach proposed by the Optimum Population Trust. The rationale for the "optimal population size" is not at all clear. Why should there be any attempt to maximize the size of the human population at all, when the human population has been so destructive to the planet and other species and itself? The optimal population approach has the appearance of a "bribe," or perhaps an "apologia" – if mankind would just agree to a smaller population size, then everybody could have a high standard of living. This approach appeals to man's greed, and that may enhance its chance of acceptance. But in the attempt to maximize the human population at all, it continues to accept, indeed promote, a substantial risk of destruction of other species and the human species. The risk of species extinction (our own as well as other species) is reduced by **minimizing** the level of human population and economic activity, not by **maximizing** it!

To survive, the human race is going to have to <u>minimize</u> its use of energy, not <u>maximize</u> it. This approach is diametrically opposed to economics, which is committed to maximizing the use of energy (since that maximizes economic activity).

What about conservation? If by the term "conservation" is meant the Conservation International approach of preserving (not exploiting) nature, then conservation is fine. If what is meant, however, is being more efficient, less wasteful, and less consumptive (e.g., by recycling, or by using fuel-efficient cars, or by using public transportation), then conservation is of no value, in the context of a large or growing industrial population. With a rising population, conservation is a complete waste of time. It is worse than a waste of time. It simply delays the day of reckoning and places the planet more seriously in jeopardy. If we reduce waste levels by 10% and then increase population by 15%, we are worse off than before. And that is exactly what is happening. Once human society is in a position where it is running out of resources (land or wildlife or energy or whatever) and motivated to conserve, it is already too late. Once mankind reaches the point where it was making measurable changes to the planet, it is already too late. Primitive cultures (e.g., the American Indian, the nomadic tribes of Africa) moved to an area, depleted its resources, and then moved on. In a few hundred years, the exhausted abandoned land was rejuvenated, and could accept new human inhabitants. Modern man stays put. After he destroys the land, he does not move on. The environment is never rejuvenated. This system will never work.

## The Minimal-Regret Population Policy

While there may be many solutions to the minimal-regret approach to determining human population size, the following is one possible solution:

**Candidate minimal-regret population**: A global human population of 5 million hunter-gatherers and a single industrialized country of 5 million.

The "candidate minimal-regret population" consists, first, of a very-low-density global population of hunter-gatherers. Why 5 million? Because it appears from archeological evidence that the planet was able to support about 5 million hunting-gathering human beings for hundreds of thousands of years, without causing substantial changes to the biosphere. (In How Many People Can the Earth Support?, Cohen discusses estimates of prehistoric global human population sizes; accepted estimates include the ranges 5-10 million and 2-20 million. Cohen accepts the range 2-20 million as credible. We shall use the range 2-20 as an interval estimate and the figure 5 million as a point estimate. See also Lynn Collins' article, "World Population," in International Encyclopedia of Population.) There is justification for believing this to be a sustainable level, because it proved to be so for hundreds of thousands, perhaps millions, of years. This belief is based on actual experience, not on conjecture. Since there are about 12.5 billion hectares of habitable land on the planet, a population of 5 million corresponds to a density of about four people per hundred square kilometers. This is about what the population and population density of human hunter-gatherers was believed to be in prehistoric times.

If 5 million, why not a larger number, such as 10 million or 20 million or 100 million? Well, the evidence is that Earth sustained about 2-20 million hunter-gatherers for hundreds of thousands of years, not 100 million. Hence 10 million or even 20 million is supportable by experience, but there is no strong experiential evidence that 100 million human beings existed for hundreds of thousands of years. Since there is no need for additional people there is no reason to "take a chance" with a larger number. It seems safest to take a number low in the range 2-20, and the number 5 was selected for that reason.

If 5 million, why not a smaller number, such as 1 million, or a hundred thousand? Two reasons: First, the evidence is that a human population size of 2-10 million was sustainable, not one million, not 100 thousand. As the population size decreases or becomes more localized, the chance of extinction increases. To maximize the probability of survival of the human species, it seems prudent to restrict the population size to an established (or accepted) sustainable size (2-20 million), rather than some other, unproven, level, and to spread it over the Earth.

Another question: why restrict the worldwide human population to huntergatherers? Why not consider primitive agriculture (i.e., preindustrial, "organicgardening" agriculture without the use of industrial chemicals such as pesticides, herbicides, insecticides, and fertilizers)? The answer is twofold. First, primitive agriculture lasted only 10,000 years, not hundreds of thousands of years, before it evolved into industrial agriculture. There is, then, far less experiential evidence that a global agricultural human society is sustainable. Second, agriculture has been very destructive of other species. With the domestication of wild animals, entire species were eliminated (e.g., the aurochs). Massive areas of forest were cleared, resulting in the extermination of local species. Even primitive agriculture is a sufficiently advanced mode of economic activity to enable massive civilizations (e.g., the Egyptians, Greeks, and Romans) to arise, with their resultant plundering and destruction of nature.

It is possible that human society could thrive in a sustainable fashion with primitive agriculture; it is perhaps too soon to dismiss it as a feasible alternative. The main reason against it is that, although it may be sustainable, it is more destructive than hunter-gatherer society, and for what good purpose? Also, it would be more difficult to manage a planet of primitive agriculturalists than a planet of hunter-gatherers, since agriculturalists are more organized (a higher level of development). In order to accept the greater difficulty and higher level of risk associated with primitive agriculture, it would have to be clear that the benefits outweighed the increased difficulty and risk.

So much for the low-density global population of 5 million hunter-gatherers. Now, what about the second component of the candidate minimal-regret population -- the single industrialized country of 5 million? The reason for specifying a small industrialized country in addition to the global hunter-gatherer population is that, now that technology is "out of the bag," there is no reason to believe that a hunter-gatherer population of 5 million would not (quickly) evolve to an agricultural society, and then to an industrial society, and then once again to extreme size. The purpose of the single industrial country is to restrict the size of the hunting-gathering population to 5 million. This is done by destroying any evidence of economic activity, such as the development of farms or large villages.

Why a single industrialized country of 5 million, and not two or more? Because if there are two or more, there is a strong incentive to grow. The strength of a nation is proportional to its level of economic activity. At a given level of development, its strength is proportional to its population. If there are two industrialized nations on the planet, each will attempt to grow in size (population and economy) in an attempt to maximize its security. With a single industrialized nation, there is an absence of modern war. With two or more countries, war is inevitable.

Why the size 5 million for the single industrialized country? This number is speculative. The desired size is the smallest size that can support an industrial society capable of restricting the rest of the planet to a hunting-gathering mode. If a single nation of one million could do the job, then the desired size of the industrial society would be one million. If the minimum sustainable size of an industrial society is 10 million, then the desired size is 10 million. In any event, the desired size is the minimal possible size of an industrial society, because of the large amount of waste generated by an industrial society. The minimal size of an industrial society is not presently known. The value 5 million is a "rough guess." Maybe one million could do the job. Maybe 20 million is required. The issue of determining the minimal sustainable size of an industrial population requires further analysis.

A final point, to elaborate on something that was discussed briefly above. What is the purpose of having a hunter-gatherer society at all? Why not just have a single industrialized population of five million, or other minimum sustainable size, as in the "minimum population" approach. As mentioned earlier, the purpose of the hunter-gatherer society is to increase the odds of long-term survival of the human race. Any population that is very localized -- and a small industrial population will be localized -- is in danger of extinction. In the case of a single industrial population of five million, a few nuclear weapons or an asteroid could easily extinguish the entire population. Having a hunter-gatherer population distributed around the globe significantly promotes the likelihood that the human race will survive this type of catastrophe.

In other words, the hunter-gatherer population and the industrialized populations need each other. They form a symbiotic relationship. The small, industrialized population keeps the size of the hunter-gatherer population (and hence global human population) in check; the hunter-gatherer population is insurance against catastrophic destruction of all mankind. The hunter-gatherer population also provides the industrialized population with a *raison d'être*. Preserving mankind and a Garden-of-Eden balance of nature on Earth may be a reasonable mission or goal statement, but it is too general for use as an operational objective. Maintaining a hunter-gatherer population in check is a specific, tangible objective -- a reason for getting up each morning and going to work.

# Attributes of the Minimal-Regret Population Policy

The primary objective in specifying the size of the industrial and hunter-gatherer populations is to minimize the amount of energy controlled by mankind, and to let nature do its job in maintaining a Garden-of-Eden balance. This is totally the opposite of the current approach of attempting to maximize the amount of energy

controlled by mankind. Instead of using 40-50% of the energy produced by photosynthesis for man's exclusive purposes, the goal would be to utilize a minimal amount, say 1% or less, for man's purposes. Mankind got into trouble when its numbers and activity increased to the point at which it started making measurable changes to the planet's environment. The minimal-regret population would return control of the planet's ecosystem to nature, with minimal interference from man.

The role of the industrial society of 5 million is planetary management. The current approach of having 229 countries, each champing at the bit to grow in economic size or population size or both, is a complete disaster. It is the same as having a ship with 229 captains – 229 greedy, venal captains! Recent experience has shown that the current system – permissive, undisciplined, economics-based – is making planetary-level changes in the planet's atmosphere and biosphere, to the point where the continued existence of the biosphere as we know it is jeopardized.

With respect to the global hunter-gatherer population, the candidate population size has been proven by experience to be sustainable. But the addition of the 5 million industrial population introduces an aspect that was not a part of long-term human history. The question arises as to whether an industrial society of 5 million is sustainable. It may be or it may not be. Without it, however, the global hunter-gatherer population would surely develop and grow. There is a risk associated with any level of industrialization, but the candidate population minimizes that risk by setting the size of the industrial population as low as possible.

For simplicity, the "candidate minimal regret population" of 5 million industrialized human beings and 5 million hunter-gatherers might be referred to as a "5-5" or "double-nickel" population (or population policy). It is important to recognize, however, that the sizes of 5 million industrial human beings and 5 million hunter-gatherers are somewhat arbitrary, although they are of the right order of magnitude.

The candidate minimal-regret population puts an immediate halt to large-scale industrial activity. It restores the planet's biosphere as close as possible to the way it was prior to the massive changes brought about by agriculture and industrialization. It reduces the likelihood of an industrially induced planetary disaster (e.g., greenhouse-gas disaster, biodiversity "meltdown") to a low, nearpreindustrial level. It raises the likelihood of mankind's survival back to what it has been for hundreds of thousands of years. It saves the planet for future generations. It bequeaths the same planet to each future generation. It rejects the notion that this planet is the chattel of the current generation to destroy for all time. It accomplishes all of these desirable outcomes. It restores to all other species the freedom and ability to continue to exist. All that is denied to mankind is the freedom to propagate to the limit and to destroy all earthly species, including itself.

Many people do not realize how high the quality of life is in a hunting-gathering society. Robert Heilbroner discusses this in his book, <u>Visions of the Future: The Distant Past, Yesterday, Today, and Tomorrow</u>. Quoting economist Vernon Smith, he observes that ever since Thomas Hobbes there has prevailed the perception that life in hunting-gathering societies was (to quote Hobbes) "solitary, poor, nasty, brutish, and short," but that this perception is quite incorrect. Hobbes' contention was that the desire for power leads to a state of nature where life is "solitary, poor, nasty, brutish, and short." Hunting-gathering life was, in fact, relatively easy – hunter-gatherers were the original affluent society. Although people did not have much in the way of material possessions, no one was poor. Poverty is a social condition that was created by civilization. It is desire for power, enabled by agriculture and industry, that leads to inhuman conditions, not natural life in a hunter-gatherer society.

This is a very important point. Poverty and its associated human misery are caused by civilization, by economic development, by industrial activity. Poverty does not exist in a hunter-gatherer society. Man lives in balance with nature, and there is good physical, mental, and emotional health. The UN, World Bank, and other economic development organizations call incessantly for more economic development. They have created a religion of development, playing on people's fear and greed. They deceive and seduce, insisting that human welfare can be improved only with increased economic development, empowerment, and elimination of inequality. They cite all sorts of maxims and platitudes, such as "Development that perpetuates today's inequalities is neither sustainable nor worth sustaining," or "Short-term advances in human development are possible but they will not be sustainable without further growth. Conversely, economic growth is not sustainable without human development," or "Human development and economic growth should move together, strongly linked" (UN Human Development Report 1966). Tell a big enough lie, and people will believe it. Economic development is not the solution to human misery, it is the cause of it. To eradicate poverty, it is necessary to get rid of economic and industrial development. More development will inevitably lead to more poverty and human misery. Human misery exists on a massive scale because industrial development exists on a massive scale. To reduce the level of human misery, it will be necessary to reduce the level of industrial development.

<u>The Economist</u> ("The Sea: A Second Fall," May 23, 1998) seconds this viewpoint. It equates the eviction of Adam and Eve from the Garden of Eden with the end of hunter-gatherer society. It is agricultural and industrial society that is harsh and brutal, not hunting-gathering society. God told Adam, "Cursed is the ground because of you; through painful toil you will eat of it all the days of your life. It will produce thorns and thistles for you, and you will eat the plants of the field. By the sweat of your brow you will eat your food until you return to the

ground, since from it you were taken; for dust you are and dust you will return." <u>The Economist</u> observes that farming was the antithesis of nomadic life, with rotten teeth and stunted bones replacing healthy bodies.

Society's leaders promote civilization (and economic development) not because it provides a better life for the masses. It does not. It provides misery for the masses. Leaders promote civilization because social organization provides a level of wealth and power to the leaders which is not possible in a huntergatherer society. And that is why world leaders will fight to save worldwide civilization and promote globalization at any cost. Not because it helps people, but because it furnishes luxury to those in control, even though at tremendous cost – lifetimes of misery – to billions. That civilization will eradicate poverty and human misery is one of the greatest lies ever perpetrated on the human race. That "the poor are always with you" is an unavoidable byproduct of civilization.

The common perception today – a myth – is that the destruction of industrial civilization would be a terrible thing, the ruin of mankind. The fact is, industrial society has been the ruination of mankind. Man evolved as a hunter-gatherer, and it is a natural, hunter-gatherer existence that serves him well. "Back to the Stone Age" should be perceived as a rallying cry to a better life. Man was banished from a hunting-gathering existence to an agricultural one, not the other way around. Returning mankind to a hunting-gathering lifestyle will not only save the planet from destruction, it will free billions of people from grinding poverty as well.

From a theological perspective, the Bible is replete with the destruction of cities, tribes, nations, and civilizations - even the entire antediluvian world. Sodom, Gomorrah, Babylon, Rome – even Jerusalem – all have fallen. Civilizations rise and civilizations fall. That is the natural process. They rise when they are motivated, disciplined, dynamic, principled, united, and have a sense of destiny and purpose. They fall when they become decadent, dissolute, profligate, prodigal, and lose their sense of purpose. Significant civilizations and cultures meet their demise by war and conquest, not by assimilation – by revolution rather than evolution. Modern (industrialized) civilization is destroying the planet, wasting its bounty in the ceaseless accumulation of material wealth and insatiable pursuit of pleasure. The US is replacing the absolute morality of Christianity with relativistic inclusiveness, permissiveness and tolerance. Western Civilization and the US have replaced the religion of Christianity with the religion of economics. "In God We Trust" is out, and economics is in. Economics is the religion of the modern, industrialized world. Economics is its system of morality, and industrial development is the graven image that it has created. It is time to take heed that "those who destroy the Earth will be destroyed."

Heilbroner discusses conditions for long-term survival of humankind. The first is the achievement of a secure terrestrial base for life. "The Earth must be lovingly maintained, not consumed nor otherwise despoiled. The atmosphere, the

waters, and the fertility of the soil must be protected against poisoning of any kind from human activities. The population of the globe must be stabilized at levels easily accommodated to the Earth's carrying capacity under technological and social conditions that we – and presumably they – would find agreeable." He notes that the attainment of this civilizational advance is impossible, since it entails the absence of any socio-economic order whose continuance depends on ceaseless accumulation.

Heilbroner believes that for civilization to advance, the world must be made safe from war. He cites two ways in which this may be done: The first is effective global government, and the second is its abolition. He views the second alternative (a denationalized world of independent settlements, villages, and communities) as practical if mankind engages in a global war that destroys nations and leaves large areas uninhabitable. He views the first alternative (world government) a feasible approach if a catastrophic global war does not occur. The minimal-regret paradigm described in this book is in a sense a hybrid of both approaches: a single, small national government that maintains the rest of the world in a hunter-gatherer mode (of denationalized, independent settlements).

### XI. How Soon Should Human Population Be Reduced?

The preceding chapter specifies a human population that promotes the probability of survival of the human species, at minimal damage to the planetary ecosystem, but it does not discuss a means or a timing for accomplishing this population.

This chapter addresses the issue of timing. <u>Gaia: An Atlas of Planet</u> <u>Management</u> includes data on deforestation. In 1950, 30% of the Earth's land area was covered by forests, half of which was tropical forest. By 1975, the area covered by tropical forest had been cut in half, to 12%. By the year 2000, it is estimated that tropical forests will cover just 5% of the land. At this rate of destruction, all tropical forests will be destroyed early in the next century.

<u>World Resources 1998-1999</u> presents a table, "Atmospheric Concentrations of Greenhouse and Ozone-Depleting Gasses, 1965-96." This table indicates that the concentration of carbon dioxide has risen from the preindustrial level of 260.0 parts per million (ppm) to 319.9 ppm in 1965 and 362.6 ppm in 1996. This concentration is increasing at the rate of almost .5% per year. Carbon dioxide concentrations are caused by burning of fossil fuels and forests. Each year the concentration of this greenhouse gas increases, as the human species continues its relentless destruction of irreplaceable fossil fuels and wildlife habitat. This destruction will not stop until a dramatic reduction is made in human population and industrial activity.

Mankind's industrial activity is causing changes at a horrific rate. The rate of change will increase even faster as undeveloped countries industrialize. In view of the fact that the consequences of these changes will be catastrophic, as radical as it may seem, human population and industrial activity must be reduced dramatically and immediately in order for the planet to survive. There is no known reason for waiting. With every passing year there is less biodiversity left to save.

As Walt Kelly's cartoon character Pogo once observed, "We have met the enemy, and he is us!" What is causing the severe problems in the Earth's biosphere is man's presence in large numbers. The human species, with economics as a catalyst, has infested the planet. It has grown like a cancer to the point where it is killing many species and, if it continues, will kill both itself and the rest of the biosphere. It is a parasite killing its host. The time to treat this disease is long overdue.

## XII. The Inevitability of Nuclear War

This chapter discusses the likelihood of nuclear war.

### Historical Developments

During the past several decades, from the end of World War II (1945) to the demise of the Soviet Union (1991), the world political situation was relatively stable. The Cold War involved two superpowers, the United States and the Soviet Union engaged in a nuclear standoff. Neither side wanted nuclear war, and it never happened. The defense strategy was Mutual Assured Destruction, or MAD. Both sides possessed thousands and then tens of thousands of nuclear weapons. Since there was no effective defense against a massive ballistic missile attack, both sides were convinced that attacking the other would be tantamount to committing suicide.

And nuclear war never happened.

### The Present Situation

The situation has changed now. A book on the subject is <u>The Clash of</u> <u>Civilizations and the Remaking of World Order</u>, by Samuel P. Huntington. The journal <u>Foreign Affairs</u> contains many articles on the subject. With the collapse of the Soviet Union, there remains one world superpower, the United States. Both sides are in the process of reducing the sizes of their nuclear stockpiles from the current level of 36,000 warheads (19,775 operational) to just a few thousand. See <u>Taking Stock: Worldwide Nuclear Deployments 1998</u> by William M. Arkin, Robert S. Norris, and Joshua Handler of the Natural Resources Defense Council for a discussion of current nuclear weapon stockpiles and nuclear disarmament.

The breakup of the Soviet Union and the end of the Cold War have reduced the risk of a deliberate nuclear war between the United States and Russia, since much of the animosity is gone. Looking at the world as a whole, however, the situation is more dangerous than ever before. The number of nations possessing nuclear weapons has increased by two, with the addition of Pakistan and India. The level of control over the weapons of the former Soviet Union has been reduced. The level of control over fissionable material from which nuclear bombs can be made has also been reduced. With each passing year, the amount of fissionable material in the world increases. With each passing year, the resentment of the world's poor nations and cultures for the rich nations increases, as they realize that they will never catch up. With each passing year, the anger of Islamic nations and cultures against Western culture grows.

Terrorism is increasing. Although the risk of a large-scale ballistic missile war may have decreased, the likelihood of a small nuclear war appears to have increased dramatically. Motive, means, and opportunity. All three prerequisites for action are set.

The atomic bomb was used as soon as it was available. In fact, it was used by the US at a point in World War II when the war was clearly won. In view of the fact that a "moral" nation such as the US had no compunctions about using nuclear weapons "just to bring the war to an end a little quicker," it is obvious that any nation that is in serious danger of losing a war would not hesitate to use nuclear weapons against its enemies, if it had them.

The seven "nuclear" powers – US, Russia, Britain, France, China, India, and Pakistan – possess thousands of nuclear weapons among them. The following table is taken from the Natural Resources Defense Council's publication, <u>Taking</u> <u>Stock: Worldwide Nuclear Deployments 1998</u>, by William M. Arkin, Robert S. Norris, and Joshua Handler.

Country	No. of Warheads
United States	12,070
Russia	22,500
Britain	380
France	500
China	450
Total	36,000

In addition, it is now estimated (Jane's Intelligence Review) that India has 20-60 nuclear weapons, and Pakistan between 6 and 12. India is estimated to have sufficient commercial reactor fuel to build at least 390 nuclear weapons and perhaps as many as 470.

As discussed earlier, it is now an easy matter for any motivated group to assemble an atomic bomb. It is just a matter of time before nuclear weapons are used, either in a formally declared war or in a "terrorist" attack.

What would be accomplished by a nuclear war? If the planet continues to be governed by scores or hundreds of countries after the war, nothing will have changed. Mankind will simply rebuild its destroyed cities, and human population and industrial activity will continue as before. The ultimate size of the population will be no more affected than it was by the "black plague," that killed a third of Europe's population in the middle ages – the population quickly rebounded, and soared even higher as though nothing had happened.

A nuclear war – small or large – will by itself accomplish nothing. It will not solve the population problem at all. If, however, the result of a nuclear war were the

replacement of 229 world governments by a single world government, there could be some hope of solving the problem. In this case, it would be feasible to achieve the minimal-regret population discussed in the preceding chapter.

The likelihood of nuclear warfare in the future appears high. With respect to the likely damage a nuclear war might cause, a principal issue to address is what the likely intentions of an initiator of a nuclear war might be: to cause damage to another country (e.g., a terrorist attack on a single US city); to destroy another country (e.g., a war between India and Pakistan); or an attempt to take over the world (e.g., a ballistic-missile attack by China against the rest of the world).

There are two paradigms for world peace. One is a world government of nations, such as the League of Nations or the United Nations. That paradigm has been tried for over half a century, and has proved totally feckless. The other paradigm is a single nation in charge of the world. With but a single nation, war between nations cannot happen. Whether that paradigm will prevail remains to be seen.

World "peace" – in an absolute sense meaning the total absence of organized conflict – is evidently an unachievable goal for mankind. A more realistic goal may be some sort of semi-stable equilibrium involving a controlled level of conflict. All plant and animal species have birth rates that exceed replacement levels, else they would soon become extinct. The population sizes of all species would "explode" were it not for the "balance of nature" that keeps population sizes in equilibrium. Any species that proliferates is doomed to a rapid, "catastrophic" population collapse. Technological man can temporarily upset the balance of nature and fill the planet with billions of human beings, but this cannot last. If nature's other species do not keep the human population in check, then mankind will perform this function itself, through war (organized conflict – "collective killing for a collective purpose," in the words of John Keegan). In the absence of "natural" control of mankind's numbers, war is inevitable. And as the human population explodes, the likelihood and the magnitude of war must explode as well. War, war, and more war – that is what is in mankind's future.

For technological man, nature no longer controls population size, and peace cannot occur without the population reductions of war. Peace and war are as inseparable as yin and yang. They are natural complements – one does not occur without the other. The world's industrialized nations and development organizations suggest that economic development will eliminate poverty, bring about population stability, and lead to peace. Quite the opposite is true: economic development has caused human poverty on a grand scale, it has caused the human population to explode, and it will cause war on a grand scale. Economic development sows the seeds of its own destruction.

### The Odds of Nuclear War

What are the odds that a "minimal-regret" war will occur, and a minimal-regret population established? I'm not sure about the odds that a minimal-regret population will be established, but I believe strongly that a nuclear war is inevitable. The reason for this conviction is the "politics of envy" – the desire of a "have-not" group to destroy an opponent who is better off, even if by doing so his own position is unchanged or even worsened. The politics of envy is a principal motivation of terrorist groups who attack the United States. With the proliferation of nuclear-weapon technology and weapons-grade fissionable material, it is just a matter of time until a terrorist group decides to use nuclear weapons against US cities. The US has lost control of its borders, and has accepted immigrants from all cultures into all levels of its society. It is very vulnerable.

Under the "politics of greed" – the use of politics to acquire more for yourself regardless of the effect on your opponent, it may be in the best interest of all groups to avoid nuclear war. That was the basis for the decades-long Cold War, in which neither the US nor the Soviet Union used nuclear weapons. Both would lose more than they gained. Under the politics of greed, mutually assured destruction (MAD) works as a deterrent to war. Under the politics of envy, MAD is essentially irrelevant. What matters most is destruction of the opponent, at any cost. MAD will not save the US now that the nuclear jinn is out of the bottle, and the world is filled with unhappy have-nots with access to nuclear technology.

Books on the state of the world with respect to nuclear warfare include <u>The</u> <u>Greenhouse Book of the Nuclear Age</u>, <u>Nuclear Madness</u> by Helen Caldicott. For technical information on the effects of nuclear weapons, consult <u>The Effects of</u> <u>Nuclear Weapons</u> (highly technical, now out of print) by the US Department of Defense / US Atomic Energy Commission, or <u>The Effects of Nuclear War</u> (a much less technical summary) by the Office of Technology Assessment. Other books on the effects of nuclear weapons include <u>Hiroshima</u> by John Hersey and <u>Nuclear Disaster</u> by Tom Stonier. For discussion of strategy in nuclear warfare, consult <u>On Thermonuclear War</u> by Herman Kahn and books on game theory and statistical decision theory (a few are listed in the bibliography).

It is not very difficult to make a plutonium bomb. It is not simple, but any dedicated group with funding can acquire the engineering expertise to accomplish it. In today's world, building the bomb is the easy part. The most difficult part is obtaining the fissionable material (plutonium or uranium) for the bomb. Although still difficult, this is becoming easier and easier. Libya and Iraq have made concerted efforts to acquire plutonium for nuclear weapons. It is just a matter of time until they succeed.

On January 13, 1999, the documentary television program 60 Minutes II broadcast a program about the manufacturing of plutonium in Krasnoyarsk-26, Siberia, Russia. Krasnoyarsk is an underground complex – hidden deep in a

mountain – containing a nuclear reactor that produces a half ton of plutonium a year. It is not the only such facility. One-half ton of plutonium is an amount sufficient to make 100 nuclear bombs a year, or one every three days. Since its inception, the Krasnoyarsk facility has produced 40 tons of plutonium – sufficient to make 10,000 nuclear bombs.

So what's the big deal? Well, the big deal is that Russia is broke, and the workers at Krasnoyarsk have not been paid for three months. They need to keep the reactor operating, in order to provide energy for the city outside the mountain. They have no money, and they are quite upset. The US has agreed to pay some of the cost of operation of the facility, but Russia insists now that the US pay the full bill. The point to this situation is that there is a lot of plutonium in the world, with more being manufactured every day. With the collapse of the Soviet Union and the bankruptcy of Russia, it is just a matter of time until "rogue" nations and terrorist groups that want plutonium will have it. It is just a matter of time until they have a lot of bombs. It is just a matter of time until a full-fledged nuclear war. The next big terrorist action against New York City will not be some dynamite or ANFO against the World Trade Center – it will be a suitcase bomb that decimates the entire city!

### America, wake up!

An important factor determining whether a nuclear war might occur (of any type – single terrorist action, one country against another, or one country against all) is what would be the likelihood of success, in terms of damage rendered against the enemy and damage sustained. This factor is important whether the attack is motivated by the politics of envy, or by the politics of greed, or by some other motivation (e.g., religion). This book will explore this factor further, by examining the level of damage that can be caused by a small nuclear war.

More specifically, the chapters that follow will assess the feasibility of achieving a minimal-regret population by means of a nuclear war. Attention will center on a war effected by manually placed bombs, rather than one effected by ballistic missiles. The former war type of war is considered more likely, and it is definitely easier to analyze (since it involves a simple delivery system and no defense).

At the risk of belaboring a point, I wish to explicitly state that I am not advocating or promoting a nuclear war to solve the "population problem." Rather, I believe that nuclear war is inevitable, and that in the context of the new (post-Cold War) world order, it is likely to happen soon. The key issue to address is what to do **when it happens**. When it does happen, the human population may return to "business as usual," proceed to overpopulate the world again, end up in the same situation as it finds itself today, and have another global war. (Note that it will not at all be "business as usual" after the war, because mankind has now used up most of the fossil fuels and easy-to-extract minerals. The next cycle, taking place in an energy-poor, resource-poor environment, will be hard times on
planet Earth.) The minimal-regret population policy represents one strategy for breaking out of this cycle. If it is implemented, the planet's ecology will be saved and the human population, at a modest size that exists in harmony with the rest of the biosphere, will have the time to figure out what its purpose is and develop a long-range survival plan.

Note that, by having identified the minimal-regret attack strategy (in this book), it is indeed possible that the chance that a "rogue nation" or other group may adopt it as the attack strategy when it initiates a nuclear war. I have no problem with this. In my view, if nuclear war is inevitable, the issue of which nuclear war strategy is "best" (or at least preferable) must be addressed, and the issue of what to do in the postattack context must be addressed. When nuclear war happens, I would prefer that the attacker choose the minimal-regret strategy over an alternative strategy that does not have a low likelihood of planetary destruction.

## The Ethics of Nuclear War

Ever since the dropping of nuclear bombs on Hiroshima and Nagasaki, the ethics of nuclear war have been discussed. See, for example, <u>Nuclear Ethics</u> by Joseph S. Nye, Jr.; <u>Has Man a Future?</u> by Bertrand Russell; <u>The End of the World: The Science and Ethics of Human Extinction</u> by John Leslie (some strange "scientific" assertions, but interesting ethics); the writings of Amitai Erzioi on the positive value of war; or the <u>Bulletin of the Atomic Scientists</u>. Classic works on the ethics of war (or politics) also include Sun Tzu, <u>The Art of War;</u> Niccolò Machiavelli, <u>The Prince</u>; Plato, <u>The Republic</u>, and Thomas Hobbes, <u>Leviathan</u>. And, of course, the Torah, the Bible and the Koran.

With respect to ethical considerations, this book (and the minimal-regret criterion) places strong importance on preserving the planet's biosphere, and does not place a higher value on the lives of the current living than on those of future generations. The loss of the six billion current inhabitants of Earth is viewed as an inconsequential price to pay, if that is what is required to save the planet for future use, enjoyment and fulfillment by other living creatures for the next four billion years (the expected remaining lifetime of our solar system). The current wanton destruction of Earth by mankind is viewed as a morally repugnant action of grotesque proportions. Mankind has been given dominion over the planet, and in his venal prodigality has chosen to squander its bounty and destroy its irreplaceable biological diversity.

If the morality of nuclear war is to be considered, the morality of destroying a planet and all its species by overpopulation and industrialization must also be considered. Works on this subject include Fritz Schumacher's books and the plethora of books on environmentalism, including <u>Healing the Planet</u> by Paul and Anne Ehrlich, <u>Rescue the Earth!</u> by Farley Mowat, <u>Gaia: A New Look at Life on</u>

<u>Earth</u> by J. E. Lovelock, <u>The End of Nature</u> by Bill McKibben, <u>Silent Spring</u> by Rachel Carson, <u>Gaia: An Atlas of Planet Management</u> by Norman Myers, ed., and many more, some of which are listed in the bibliography.

Although a minimal-regret nuclear war may kill almost six billion people, that must be balanced against the very real possibility that not having such a war may not only result in the deaths of six billion people, but also the extinction of mankind and the extinction of all other species on the planet (from the greenhouse effect).

If the human race is made extinct by the greenhouse effect, millions of people will have been denied life for every year of the next four billion years that the solar system is expected to last. If the Earth can support ten million people indefinitely, that represents forty quadrillion person-years of life. Is that amount of human life inconsequential compared to the lives of the mere six billion that occupy the planet today?

## Postattack Countermeasures: Preparing for the Aftermath of Nuclear War

In the 1960s, I worked for a while in the field of post-nuclear-attack civil-defense analysis, developing postattack countermeasures (vulnerability analysis, decontamination, postattack medical problems). Life **will** continue after a nuclear attack. This situation will occur, and it must be dealt with. It may be dealt with in an unprepared, unplanned way, or it may be approached with a plan. With a plan, the odds of prevailing are much better.

The situation is analogous to designing an ocean liner. No one wants the liner to hit an iceberg – that is a horrible catastrophe. There are, however, two ways of approaching this possibility. The issue may be ignored, and all hands will go down with the ship unless another ship is nearby for rescue. Or, the liner may be equipped with lifeboats and an evacuation plan. In the case of the Titanic, for example, it has been observed that if, after striking the iceberg the liner had stopped, it may have been possible to place many people **on the iceberg**, and thereby save them. But the Titanic continued to sail into open ocean, and sank twelve miles from the iceberg. The Titanic had few lifeboats and no plan, and much life was lost.

The present approach of the United States government of simply ignoring the possibility of strategic nuclear war, abandoning its population and letting it deal with the postattack situation as best it can is unconscionable. With respect to a nuclear attack on the US, the US government is an ostrich with its head in the sand. It is a prime manifestation of the country's complete lack of a sense of purpose or destiny. It has lost its bearings. It does not know what its purpose is or where it is headed. It lives only for the present, in a mindless, purposeless, hedonistic frenzy of economic development. It chooses to invest its energies in

gluttony, gorging itself on energy, expanding its population to the max regardless of the consequences for itself or the planet, rather than in planning for or preparing for the future. Other nations, such as the Swiss, have made at least some attempt to deal with this problem. Those who plan for the future may still die, but they can certainly increase their chance of survival. It is prudent to do so. It is responsible to do so.

As much as the US government and many environmentalist movements would lead you to believe, nuclear war will not be the end of the world. On the contrary, it may well be the salvation of the world. The will to survive is indomitable in the human spirit, and the survivors will fight to live. After a nuclear war mankind will simply "pick up the pieces" and start to rebuild industrial civilization all over again. As in previous history, it is likely that economics would continue to be the "driver" of man's progress. If this happens, nothing changes, and the world will simply repeat its present history and race to Armageddon. A minimal-regret strategy offers a possible way to break out of this cycle, to do things differently in the future. It deserves consideration along with other strategies with dealing with the situation before and after the impending nuclear war.

Everything is a matter of alternatives. Before embarking on any course of action, it is prudent to consider a wide range of alternatives and select the best one. A minimal-regret strategy represents a potential solution that is not perfect. It has advantages and disadvantages. To date, the present strategy – the tolerant, pluralistic, permissive approach of letting each of the 229 nations of Earth do its own thing – has been a disaster. It is a terrible strategy that is destroying the biosphere, the human species, and other species. Time is running out for the human race. It is high time to consider other alternatives that afford a better chance of long-term survival.

For the past 50 years, the situation has been talk, talk, talk. Current population policies are a disaster. The international development agencies (UN, World Bank) and developed countries have not contributed to the solution of the population problem and environmental destruction, but have exacerbated it. That is understandable. UN, World Bank, and other development officials are paid fat salaries to attend meetings and talk; there is no incentive to accomplish anything. The economic incentive is to create an ever more complex system of rights, with more monitoring, reporting, evaluation, analysis, and bureaucracy. They attend a never-ending stream of meetings and international conferences. They talk and talk about women's rights, "gender" issues, children's rights, minority rights, refugee rights, and democracy while the world disintegrates around them. They thrive on poverty and misery, and do nothing about it.

Well, there aren't going to be any women's rights or children's rights or minority rights after a nuclear war, and a nuclear war is just around the corner. There isn't going to be any democracy when the world political system collapses. These people – our leaders and advisors to leaders -- are living in an ephemeral,

chimerical, imaginary dream world that has existed for a few decades, but it cannot and will not continue. They are not facing reality and dealing with the problem. They feed on people's fear of war. They propose peace at any cost. They are living in la-la land, telling fairy tales and singing lullabies that people want to hear.

This pap may be pleasant to hear, but it does nothing to solve the problem. As Malcolm X said, "This is part of what's wrong with you. You do too much singing. Today it's time to stop singing and start swinging." The situation will not improve until it is accepted that the current course is leading to disaster, and war is declared against the enemy – uncontrolled human population and unconstrained industrial development. The situation will not improve until a stand is taken, and war is declared against this enemy of the biosphere. The American government has no desire to stop economic growth - it is committed, dedicated, devoted and addicted to it. It has sacrificed the future of the world to the religion of economics, to the god Mammon. Moreover, the US government no longer has the will to wage war, because wars cause casualties, and the US is no longer willing to sustain casualties. As noted in the January 2, 1999 issue of The Economist, "Some American officers, especially the older ones, have their misgivings. They say that a system of war built on a wish to destroy the enemy without yourself suffering any significant number of casualties is inherently dangerous. ...but the men will still need to be there, to occupy some vital hilltop or essential building, and they will have to be prepared to take the consequences."

### XIII. Low-Intensity Nuclear Conflict

This chapter examines several different types of low-intensity nuclear war. By the term "low-intensity nuclear war" is meant a war involving 1,000 or less nuclear bombs – a small fraction of the tens of thousands of nuclear weapons possessed by the world's nuclear powers. This size war could readily be accomplished, for example, by a "rogue nation" or terrorist group of small size, using 1,000 suitcase-sized atomic bombs.

The first issue to address is: how much damage can be caused by 1,000 atomic bombs? We shall answer this question by making a number of simplifying assumptions. The reason for these assumptions is to keep the analysis as "visible" as possible, and to keep the discussion at a low level of technical detail, so that no sensitive military information is disclosed.

It is assumed that the objective of the war is either to destroy population or industrial capacity, but not military facilities. To analyze the effects of a nuclear attack against population or industrial capacity, we compiled a list of all of the cities of the world having populations of 100,000 or more. Such a list is given in the 1993 UN <u>Demographic Yearbook</u>. We have also included all capital cities of countries, even though those cities may have populations of less than 100,000. The <u>Demographic Yearbook</u> does not contain data for all countries. It excludes the countries of North Korea and Taiwan. It also excludes Anguilla, Aruba, Hong Kong, Marshall Islands, Mayotte, Nauru, Niue, Northern Mariana Islands, Palau, Togo, Tuvalu, Wallis and Futuna Islands, Seychelles, and West Bank and Gaza. The populations of these cities were taken from the 1994 <u>Rand McNally World Atlas</u>. Whenever available, the city population used was the "metro area" population of the city and surrounding urban areas. If this population was not available, the "statutory" population was used.

The complete city list contains 3,385 cities. A portion of this list is presented in Appendix H. The list of Appendix H presents the city name and population for all 332 cities having population of one million or more. In addition to population, the city list (and the truncated list of Appendix H) contains several other variables that are described and used in Appendix G.

The 3,385 cities of the city list have a total population of 1,639,584,000, or approximately 1.6 billion people. The total world population is 6 billion, of which 46%, or 2.76 billion, is classified as urban (<u>World Development Report 1998/99</u> figure for 1997). Hence the city list includes about 58% of the planet's urban population.

Appendix G presents figures that describe the statistical properties of the city list. Those figures will not be described here. The main conclusion to be noted from the analysis of the city sizes is that a large proportion of the city population is contained in a small proportion of the cities. This is true worldwide, and it is true for most countries as well. The defense implication of this observation is that the world's urban population is very vulnerable to destruction from nuclear attack. A relatively small number of nuclear weapons can do a great deal of damage.

Appendix G examines the vulnerability of the world's cities to nuclear attack. Specifically, it examines the damage that is caused for four different types of attack. Each attack corresponds to a different objective, or "payoff function." In the first attack, population is targeted, i.e., the objective is to destroy as much human population as possible. The payoff function in this case is the total population of the targeted cities. For the second attack, the objective is to destroy as much industrial capacity as possible. This is accomplished by targeting cities that have a high commercial energy consumption. The third attack targets cities in countries, such as Brazil, that have a high level of biodiversity (with the objective of reducing human population in such countries). The fourth attack is a "combination" attack, which targets cities of large population and high energy consumption in countries with high levels of biodiversity.

The main conclusion of the analysis of Appendix G is that, with a relatively small nuclear attack – 1,000 atomic bombs – it is possible to destroy a large proportion of Earth's city population. For the "population" attack (which is designed to destroy as much human population as possible), an attack of this size would destroy about three-quarters of the planet's city population (of capital cities and cities of size over 100,000). The other attacks, which are not directly aimed at population, also destroy a large proportion of the total city population.

In all four attacks, cities having large populations are targeted. For the "energy" attack (the second attack), more cities in industrialized countries are attacked, since these countries consume the most energy. Countries such as the US are heavily targeted. For example, in this attack 313 of the 333 US cities having population over 100,000 are targeted, resulting in 99% of the city population being targeted. For Canada, 41 of its 47 cities (of population over 100,000) are targeted; these cities account for 97 percent of its city population (of cities over 100,000).

For the "biodiversity" attack (the third attack), countries having high levels of biodiversity are heavily attacked. In this attack, for example, all 187 cities of Brazil (of population over 100,000) are targeted.

There are two reasons for considering the "combination" attack (the fourth attack). First, it is recognized that an attack may have multiple objectives, such as destroying industrial capacity and reducing human population in countries having high levels of biodiversity (e.g., large tropical forests). Second, data on energy consumption or biodiversity were not available for all countries. In such cases, the cities in these countries are not included in the respective attack. For

example, no biodiversity data were available on Russia, so no Russian city was included in the biodiversity attack. The "combination" attack overcomes this "data problem" by attacking cities that have large population or high energy use or are located in countries having high levels of biodiversity. Since population data are available for all cities, all cities are subject to attack in the combination attack, even if the biodiversity or energy data are missing.

The graphs of Appendix G show, for selected countries, which cities are targeted for the four different types of attack. The tables presented in Appendix I are "attack summaries" that show the number of cities attacked in each country, and the amount and proportion of city population targeted in each country. In general, all countries having large populations are attacked, but many countries are not attacked at all (e.g., in the combination attack, only 103 of the total 229 countries are attacked).

The graphs of Appendix G show (for selected countries) exactly which cities are targeted four the four different types of attack considered, and the tables of Appendix I summarize the damage to each country. The message of the Appendix G analysis is that a relatively small nuclear attack (1,000 atomic bombs) can destroy a large proportion of Earth's city population.

# XIV. Country Case Studies

The preceding chapter showed that a low-level nuclear attack can destroy a very large proportion of the world's city population. This chapter examines what is left, after such an attack. The key issue to address is how many functioning countries remain, after the attack. The attacks of the preceding chapter did not take into account the country affiliation of each city; there was no direct attempt to destroy countries (e.g., by destroying a certain percentage of each country's population).

The purpose of this chapter is to impart a sense of the level of destruction of the global economic system. To that end, it examines the damage to the major world countries, and summarizes the damage to each country.

Appendix I ("Attack Summaries") presents a list of all 229 countries, with an indication of the amount of damage from each of the four attacks. The list includes total number of cities, total city population, the number of cities targeted under each attack, and the proportion of the city population destroyed under each attack (amount and percentage).

We shall now describe the situation in several countries with respect to the combination attack. Of the 229 countries, 103 of them are attacked in the combination attack. The discussion will also identify the population levels that could be supported in each country by primitive agriculture and by hunter-gatherer lifestyle. It will also discuss the racial, religious, linguistic, and cultural homogeneity of the countries.

### United States

<u>Cultural Status</u>. The current status of the United States is that it has lost its cultural identity (cultural integrity, cultural cohesiveness, cultural homogeneity) and is no longer a cohesive nation. Many books have been written about this, and the subject will not be discussed in detail. Some of the books on the subject are listed below, and many others are listed in the bibliography. Following the list is a brief summary of the situation.

- 1. <u>Slouching Towards Gomorrah</u>, by Robert H. Bork
- 2. <u>Americans No More</u>, by Georgie Anne Geyer
- 3. Alien Nation, by Peter Brimelow
- 4. <u>The Disuniting of America</u>, by Arthur M. Schlesinger, Jr.
- 5. Will America Drown? by Humphrey Dalton, ed.
- 6. America Balkanized, by Brent A. Nelson
- 7. <u>The Camp of the Saints</u>, by Jean Raspail
- 8. <u>The Global Migration Crisis</u>, by Myron Weiner

- 9. <u>The Immigration Dilemma</u>, by Garrett Hardin
- 10. The Immigration Invasion, by Wayne Lutton and John Tanton
- 11. Immigration Out of Control, by John Vinson
- 12. <u>Still an Open Door?</u> by Vernon M. Briggs, Jr. and Stephen Moore
- 13. Importing Revolution: Open Borders and the Radical Agenda, by William R. Hawkins
- 14. Peaceful Invasions: Immigration and Changing America, by Leon F. Bouvier
- 15. Fear of Strangers And Its Consequences, by David Allen
- 16. Population Politics, by Virginia D. Abernethy
- 17. <u>How Many Americans? Population, Immigration and the Environment</u>, by Leon F. Bouvier and Lindsey Grant
- 18. Population Versus Liberty, by Jack Parsons
- 19. Mass Immigration and the National Interest, 2<sup>nd</sup> ed., Vernon M. Briggs
- 20. Divided We Fall, by Haynes Johnson
- 21. The Path to National Suicide, by Lawrence Auster
- 22. The Myth of Open Borders, by Wayne Lutton

At the time of the Second World War, the United States was relatively homogeneous. Its citizens spoke mainly English and it was predominantly white European, and Protestant Christian. Prior to 1965, US immigration policies were oriented to acceptance primarily of immigrants from Europe and the exclusion of immigrants from Third World countries. The policy was to maintain the country's basic ethnicity as white, English-speaking, Anglo-Saxon or European, Judeo-Christian, and Western (Greco-Roman). In 1963, John F. Kennedy published a book entitled, A Nation of Immigrants, in which he proposed reversing the policy of immigration in favor of Europeans to a policy in favor of Third-World immigrants. After his assassination, his brothers Edward and Robert Kennedy worked hard to pass a new immigration law - the Immigration Act of 1965 which changed immigration policy in favor of Third World countries, emphasized "family reunification" rather than skills as a basis for granting immigration, and raising the immigration quotas. Some, such as North Carolina's Sen. Sam Ervin, argued that the proposed legislation would flood the country with immigrants and dramatically alter the cultural identity of the nation.

Edward Kennedy argued that the bill would not flood our cities with immigrants and would not upset the ethnic mix of the country. He claimed that those who raised such concerns were irrational and bred hatred of our heritage. Although Kennedy's claims were patently false, the bill was passed, and the immigration floodgates were opened. The result has been a disaster for the nation. The population has soared from 194 million in 1965 to 272 million today, primarily because of immigration. Current immigration rates exceed a million a year. The ethnic/racial balance of the country has dropped dramatically, from a white, English-speaking, Christian majority of almost 90% to about 70%, and it is projected that by the year 2050 the white, English-speaking, Christian segment of the population will be in the minority. They will be strangers in their own land – in the land that their forefathers killed to create for them. When aliens and their progeny outnumber <u>your</u> culture, they are no longer aliens. At that point, they are invaders and would-be conquerors of your country. They have become masters not only of their own destiny, but of yours as well. Massive immigration is tearing the United States apart. The result will be either a handover of white, English, Protestant America to foreign culture, or civil war.

The Immigration Act of 1965 has been a disaster for the nation not just because millions of acres of natural land have been paved over, but because large-scale immigration has destroyed it ethnically and culturally. It is no longer the stable nation that it was in the 1940s and 1950s. Senator Daniel Patrick Moynihan predicted a long time ago that the Soviet Union was bound to collapse under the pressure of ethnic differences (see <u>The Economist</u>, January 2, 1999, p. 30). The US is now in the process of creating ethnic diversity of the same kind that destroyed the Soviet Union and Yugoslavia, and is now destroying Canada. It is in the process of committing cultural suicide.

The United States was able to accommodate immigration in the past because immigrants were assimilated. Today's immigrants are not being assimilated. Many do not speak English. Many are nonChristian. Many do not have a Western Civilization heritage. Many are nonwhite. They are not assimilating into a cohesive, homogeneous nation – a people with a common language, religion, race, culture, and heritage. The country is turning into a fractionated, balkanized state, and it will follow in the paths of other balkanized states – dissolution. A multicultural world is a wonderful, fascinating place. A multicultural nation is an oxymoron. A nation is not defined or strengthened by cultural (or ethnic or linguistic or racial) diversity, but by cultural homogeneity.

In his book, <u>Why the Nations Rage: Killing in the Name of God</u> (Hodder and Stoughton, London, 1997), Christopher Catherwood discusses how multiculturalism – primarily religious differences – has torn the former Yugoslavia asunder. What is happening there will happen in the US before long, as the cultural homogeneity of the US is destroyed by mass immigration.

The passage of the Immigration Act of 1965 is a classic example of the "politics of envy." The "politics of greed" is easy to understand and accept – the use of political power to further one's own interests. The "politics of envy" is mean: the use of political power by the "have-nots" to destroy the "haves," whatever the consequences – even if it means that everyone will be worse off. As Catholics, the Kennedys by definition could never belong to the country's Protestant powerholding elite. Under a democratic system of government, a sure way to defeat the majority culture is by increasing the size of the nonmajority culture until it exceeds the majority culture in size. The Immigration Act of 1965 was the instrument by which this would be accomplished. This objective is now half-completed. By 2050 it will be complete. White, English-speaking, Protestant

Christians will no longer be in charge of America. Under the politics of envy, the fact that white, English-speaking Catholics will also not be in charge is irrelevant.

Anyone who has seen Akira Kurosawa's movie <u>Ran</u> can appreciate the power of the politics of envy. Just as Lady Kaede destroyed the House of Ichimanji, John and Edward Kennedy have driven a stake into the heart of America. It survives today only on the steroid of fossil fuels, the narcotic of industrial materialism, the amphetamine of heady economic growth. Its strength is illusory. The cultural glue that once held it together is being dissolved by immigration. Its spirit has been adulterated, weakened by decades of seduction from the Delilah of multiculturalism, pluralism and tolerance.

The United States is now a permissive, inclusive, multicultural, multiethnic collection of people that has lost its cultural identity. The only thing that holds it together is its vast wealth. There is an "affirmative action" program for virtually every sizable minority. Once the wealth is gone, however, it will quickly disintegrate into ethnic/racial war. America will no longer have the resources to prevent discrimination on the basis of race, gender, age, religion or ethnic origin.

And the wealth will soon be gone. America's vast wealth derives today from energy that is pumped out of the ground almost for free. Economists tell us that the cost of commodities is becoming cheaper and cheaper as technology advances. But they are referring to dollar (market) costs, which have little to do with environmental costs or energy costs. They fail to point out that the proportion of energy consumed by the energy-production process itself becomes larger and larger as mankind uses up the cheap energy (oil) and moves to other energy sources (nuclear energy, oil shale, biomass).

America was founded by white Europeans who had no qualms about killing other races (the Indians) or nationalities (the French, the Spanish, the British), and enslaving people of other races (the Negroes). As other nations had done throughout history, they had no problem ignoring the plight of their slaves or the dispossessed Indians, as they solemnly wrote, "We hold these truths to be selfevident, that all men are created equal, that they are endowed by their Creator with certain unalienable rights, that among these are life, liberty, and the pursuit of happiness." They did not fight the Revolutionary War to set Negroes free, or to establish a multicultural society. They could easily distinguish between what is necessary to forge a strong nation and what is moral on the personal level, and, to paraphrase Gen. Patton, "they knew what to do." They knew that while Christianity directs all men to love one another on a personal level, nations must possess a strong cultural core and defend that cultural core if they are to continue to exist. When the US was formed, and for many years after, it possessed a strong cultural core. As President Andrew Johnson stated in 1865, "This is a country for white men, and by God, as long as I am president, it shall be a government for white men."

Today, our children are taught that one culture is just as good as another, that one religion is just as good as another. While this is certainly arguable, that attitude will prove fatal for any culture that really believes it. A soldier must believe that his culture, his religion, his family is worth fighting for – that there is some good reason why he is being asked to lay his life on the line, make his wife a widow and his children orphans, and kill other fine young men. What is the point to this sacrifice, if his country is selling his culture down the river? In the final analysis, it is his own family and culture that a soldier is fighting to preserve and is willing to lay down his life for. And any nation that forgets this will not last long.

The US has completely lost control of its borders. People from all parts of the world are simply walking across its borders or arriving in boats, just as Jean Raspail predicted in his prophetic novel of twenty years ago (<u>The Camp of the Saints</u>). When that happens, a nation is not longer a nation at all. It is estimated (<u>Statistical Abstract of the United States 1997</u>, Table 10) that there are now about five million illegal immigrants in the US. Thousands more arrive every month; the Immigration and Naturalization Service cannot recruit them fast enough. Why does the white, European, English-speaking Christian cultural "core" of the US do nothing to stop its demise? The primary reason is economic – business wants lots of immigrants for cheap labor. The other is political. Anyone who speaks out against immigration now is branded as a "racist"; now that America's cultural core has been diluted, that spells disaster for any political career.

The Immigration Act of 1965 has spawned a whole "immigration industry." The US government no longer tests immigrants, but farms that job out to contractors. All sorts of ethnic special interest groups have arisen (e.g., LULAC, MALDEF, La Raza) to promote immigration, special benefits for immigrants, and foreign culture. The Act has led to an entire law industry devoted to immigration and immigrants. See Importing Revolution: Open Borders and the Radical Agenda by William R. Hawkins for details on special-interest groups that are dedicated to promoting immigration and alien culture, and thereby promoting the destruction of America's land, environment and culture.

When the minority population becomes the majority population, the original population – so feckless that it would allow this to happen – can be simply pushed out of the way. As Ghandi said to the British in India, "There is no way that you can remain in India if 400 million Indians do not wish for you to be here."

The United States fought a bloody civil war in 1861-1865, and because of the Immigration Act of 1965 it may well fight another. We have fought the Spanish several times over land, but are now, through our own legislation and lack of resolve, in the process of giving back the land (Florida, Texas, California, Arizona, New Mexico) that our forefathers fought, killed and died for. The US government has allowed millions of Hispanics to invade this country, and even granted them citizenship.

<u>The \$100 Solution to the Immigration Problem</u>. The immigration problem in the US could be solved in about a week, at the cost of about one hundred dollars. How: simply make illegal immigration a capital crime. All that is required is a coil of rope for a noose and some wood for a gallows. Then, each afternoon, hang an illegal immigrant, in public. For maximum effect, the hanging could be in the original British way, with no broken neck, so that the condemned wriggles and writhes. Very quickly, illegal immigrants would "get the message," and go back home.

Will this be done? Of course not. Americans are now too squeamish to lose lives or take lives, even in war. (See <u>The Economist</u>, January 22, 1999, p. 28 for further discussion of this development.) This proposal would in fact save many American lives. Illegal immigrants are criminals. The federal prisons are flooded with them. Even if it is assumed that the murder rate for the illegal immigrant population is the same as for the general population (currently about 8 per 100,000 per year), they are responsible for about 400 murders per year (8 x 5 million / 100,000 = 400). That is more than one a day. Even if an illegal immigrant is hanged every day for a year, that is only 365 executions a year. By doing this, and getting rid of the illegal immigrants, the lives of 400 Americans would be saved, every year. Ask any mother whose child has been killed by illegal immigrants whether she thinks illegal immigration should be a capital crime.

There are other ways in which immigration could be stemmed. Exile any businessman who hires an illegal alien to the alien's country of origin. Require anyone who sponsors an immigrant for citizenship to trade places with that person, and to emigrate to his country.

The preceding examples may seem extreme and convulsive, but the eventual result of uncontrolled immigration – civil war – is also convulsive, and on a much grander scale.

The alien invasion is a war against America, but America is not fighting back. In the words of Malcolm X, it is necessary to fight back "by any means necessary" if it is desired to win.

As has been pointed out by many authors, the immigration problem is in fact a war that is destroying America's white, English-speaking, European Christian cultural identity. Since 1965, millions of nonwhite, non-English-speaking, nonEuropean nonChristians have flooded the country. Whole cities have been taken over by nonwhite, non-English-speaking, nonEuropean nonChristian immigrants and their progeny. Had this change happened over a few weeks, the

core culture of the US would have declared war and repelled the invasion. But because it has happened over thirty years, it has been allowed to happen.

The flood of immigrants – legal as well as illegal – is an invasion that is rapidly destroying the US core culture. It is a war that is being lost, because few Americans are willing to take a stand. Nobody wants to be called a racist. Nobody is starving to death, and saving the core culture simply is not worth doing. Perhaps it is no longer worth saving. Thomas Jefferson observed that the tree of liberty must be refreshed from time to time with the blood of patriots and tyrants. Our forefathers watered the tree of liberty with their blood, and established a strong, vibrant, unified country. The generation of Thomas Jefferson was willing to die and willing to kill to establish a homeland for white, English-speaking, Protestant Christians. The current generation of Americans is not willing to do that, and so they shall be quickly vanquished.

When a generation prevails on the battlefield, it establishes its culture at that point in time. Thomas Jefferson's point was that just because your forefathers fought and died for your country, you have little claim to it. It is yours only as long as someone else does not take it away. It is necessary for each new generation to reestablish its claim to its land. That is one reason why "each generation has its own war." As long as populations grow – and that is the biological nature of man -- there is competition for the planet's resources and land, and conflict. In an energy-rich environment that conflict may be deferred for a while, but it is only postponed, not cancelled.

As observed by Peter Brimelow (<u>Alien Nation</u>), most nations of the world simply do not accept immigrants. America is a laughingstock. If a white American applies to immigrate to China or Japan or India or South Korea or Taiwan or Mexico or Jamaica or Egypt, they will laugh in his face. As Brimelow notes, the US allows 1.6 million residents of Chinese origin, but China will not accept a single immigrant. China and Japan know what the game is; the US does not.

The following table shows the resident population of the US, by race and Hispanic origin (<u>Statistical Abstract of the United States 1997</u>, Table 30; data for 1990).

Race and Hispanic Origin	Population (thousands)
Total	248,710
White	199,686
Black	29,986
Am. Indian, Eskimo, Aleut	1,959
American Indian	1,878
Eskimo	57
Aleut	24
Asian or Pacific Islander	7,274

Chinese	1,645
Filipino	1,407
Japanese	848
Asian Indian	815
Korean	799
Vietnamese	615
Laotian	149
Cambodian	147
Thai	91
Hmong	90
Pakistani	81
Hawaiian	211
Samoan	63
Guamanian	49
Other Asian or Pac. Islander	263
Hispanic Origin	22,354
Mexican	13,496
Puerto Rican	2,728
Cuban	1,044
Other Hispanic	5,086
Not of Hispanic Origin	226,356

When I was a boy, I read journalist Lincoln Steffens' story, <u>Boy on Horseback</u>, about Steffens' youth in the countryside hills around Sacramento. Those hills have now been invaded by Hmong tribesmen. They no longer belong to Lincoln Steffens' memory or to his progeny. Recently, the news reported that San Diego now has so many Vietnamese that it has started a Vietnamese newspaper. The numbers of aliens flooding American cities exceed the population of many small countries.

Everywhere there are signs of our disappearing culture. Signs at Christmas usually say "Happy Holidays" or "Season's Greetings" instead of "Merry Christmas." Spanish is showing up everywhere, including product information, automatic telephone answering machines, automated banking machines. The taxi drivers in the nation's capital are not Americans, but Middle-Easterners and Orientals. Clerks in convenience stores and motels are Asians now, not coreculture Americans. The government (at all levels, federal, state and local) wastes millions of dollars every year providing forms, legal services, and social services in multiple languages. Mosques are sprouting up in many American cities. Many of the people you see wearing saris and headdresses now in the US are citizens, not visitors. Entertainment and the media are replete with representation from multiple cultures.

The white English-speaking population, that founded the country, is now just 71% of the total. We are rapidly going the way of the Fijians. Fiji allowed so much immigration that in 1987 the immigrants – mostly Asian Indians – outnumbered

the native Fijians. They had granted the immigrants citizenship and the right to vote. Under the democratic form of government, they no longer had the right to govern their own land. Although perfectly legal, it was not right, and the army assumed control.

Is that what is going to happen in the United States? Will someone assume control, nullify the Immigration Act of 1965, and send everyone who is here as a result of it back to his country of origin? When the "flashpoint" is reached and the core culture of a nation realizes that it is losing control of its country, anything can happen. David Allen discusses these concepts in <u>Fear of Strangers</u>. Immigrants may assert a right of majority rule, but the original inhabitants will assert the right of ownership, their right of primacy. When an established nation is defeated by a superior power, international law recognizes the legitimacy of the violent successor.

What defines our culture, and establishes the sides when the "paradigm shifts" and the US descends into civil war? Anything. Cultures are arbitrary, intangible, multidimensional and constantly changing. The culture that founded the US in 1776 is different from the culture that "saved the Union" in 1865 and the culture that won World War II in 1945. The sides will be determined when the situation arises. The term "US core culture" refers to the dominant cultural group in the US at a point in time, but that culture is dynamic, not static. The point is that when things get rough, sides **will be** taken, and they will be determined by culture (race, language, religion, ethnic origin). That may seem very arbitrary and discriminatory, but it is the nature of life.

Recent history is replete with examples of nations that are now extinct because they did not fight. A hundred years after their arrival, the white missionaries who came to Hawaii had swamped the native population. Push came to shove near the end of the nineteenth century and it was necessary for the native Hawaiians to take a stand and fight for their country, or lose it. Queen Liliuokalani did not want to shed any Hawaiian blood, however, and so her country was lost. It could be free country today had the Hawaiians been willing to fight and die and kill for it. Instead, the native Hawaiians have lost their land and their country and their nation; their religion, language, race and culture are now in the process of being assimilated into an alien culture. (An irony here is that, after taking Hawaii from the native Hawaiians, white America has now lost the Islands to the Japanese. Incredibly, it has done this not by being pushed aside by the Japanese, but by inviting them in. The brave sailors who gave their lives to fight the Japanese at Pearl Harbor and elsewhere in the Pacific fought in vain. Their sacrifice has been desecrated by a new generation of multicultural Americans who simply give to the Japanese what the brave men of World War II gave their lives to protect from invasion. This is hardly unusual in human history. The sacrifices of earlier generations may be recounted for political advantage, but they are respected, honored and revered only as long as their culture thrives.)

By the year 2050, the US core culture will have followed the path of the Fijians, and given control of their destiny to other cultures. If US core culture is so dissolute that it can do that, it does not deserve a land – it is already moribund. The main reason the US is allowing a flood of immigrants is for money – immigrants are cheap, motivated labor, willing to do any job, and offering a competitive labor advantage in the international labor market. The Bible (Gen. 25:19-35) tells the story of Jacob and Esau. One day, Esau, famished from being in open country, begged Jacob for some stew. Jacob replied, "First, sell me your birthright." Esau, caring nothing for his birthright, did so, and ate. The United States' core culture is currently selling its birthright in exchange for cheap labor and money. It holds of no value its birthright to the nation forged by blood and steel by Washington, Jefferson, and others. It is following the path of Esau, and it will reap the reward of Esau.

If the members of a new generation of a nation or people wish to remain free, they are going to have to make the same sacrifices as their forefathers. Today's Americans are unwilling to make the hard choices necessary to remain free and propertied, and their freedom and land will soon be taken from them. Instead of killing the illegal aliens who are flooding into the US, today's Americans are giving them jobs, welfare benefits and land. What our forefathers fought and died for is of no value to today's Americans, and they will not possess it for long.

As Sun Tzu pointed out thousands of years ago, if you do not know yourself or the enemy, you are going to lose the war. America is losing the war against the alien invasion; many Americans do not even realize it is happening. A friend of mine recently took his grandchildren to the Miami zoo. For the whole day, the only English he heard was from his own family. Miami has fallen to the aliens. Every time you see an Asian face on television, or hear a foreign accent, or see a Moslem headdress or an Indian sari, envision an alien plunging a bayonet into the belly of your grandchild, or smashing your grandchild's head against a wall, because that is what it is coming to.

Another friend of mine recently did some computer work for the Asian owner of a chain of "convenience" stores. He though the business of a convenience store was selling food and gasoline. He was amazed when the owner told him he could give away the food – he made his money on high-interest loans to immigrants who wanted to stay out of sight! That is the culture that Americans are now willing to let shove aside their own.

America, wake up! Your government is giving your country away. Every immigrant admitted to the country consumes the same amount of the national parks and national forests and lakeshore property and wild animal habitat as an original inhabitant. When I was a boy, my father, on a modest income, could always buy us lakefront property near the town in which we lived (we lived in several towns while I was growing up). Because of overpopulation, that kind of property is now available only for the wealthy. When I was a boy, I remember expressing my dismay to my father at all wildlife "road kill" on the highways where we lived (eastern Canada) – raccoons, possums, foxes, porcupines, skunks, deer, rabbits and squirrels – all the time. (Of course, if you met a moose, it was <u>you</u> who was road kill!) I will never forget his response, since it illustrates vividly how things are not always what they seem. He explained that the reason there was so much carnage on the highway was that there was plenty of wildlife around – that we should be worried if there were no dead animals on the roads.

Think about it. When is the last time you saw a dead fox or porcupine on the road? The people of the US have literally sanitized the country. Everywhere you go on the East Coast is roads and houses. Wildlife has been annihilated in most places, and relegated to state and national parks in others. All of the other land has been made practically devoid of mammalian wildlife of any size.

The massive crowding of our parks, the loss of lakefront property, the overcrowding in our cities, the long commute times to our jobs, the loss of wildlife habitat – all of these are directly due to immigration. Since 1975, your government has given away more than 25% of your country. You can no longer decide to whom you are going to sell your house, and you can no longer decide whom you are going to hire. Under our majority-rule system of government, you will no longer be in charge of anything by the year 2050. With the paralysis of government by the "tyranny of the minority," you are really not in charge already.

If white America wishes to preserve its culture by excluding browns or blacks or yellows or reds, that is called racism by the liberal multiculturalists. If Tibetans wish that the Chinese would not invade their country and eradicate their culture, however, liberals view that as a perfectly understandable position. Multiculturalist Americans are on a witch-hunt against white racism, yet say nothing against the nonwhite racism that pervades the world. Wanting to preserve your family or tribe or the racial composition of your nation may be called racism – it is racism -- but it is also common sense. It is practiced by every nation of the world that intends to survive. (See John C. Vinson: Immigration and Nation, a Biblical View.)

Americans do not like to talk about miscegenation. It is, however, the main reason underlying black/white conflict in America. It was <u>the</u> reason why Southerners resisted desegregation. As noted by David Allen (<u>Fear of Strangers</u>), the offspring of miscegenation represent the death of whiteness, and all of its privileges, for all time. Race, next to gender, is the most defining of all human characteristics, and it is a natural instinct to preserve this major aspect of self-identity. The Japanese do, the Chinese do, the Germans do, the Israelis do – every culture with a strong self-image and desire to survive does.

Why do people take a stand on race, religion, and culture? Because they want to survive. If a race or culture is to preserve itself, it cannot allow other cultures to intermingle with it. It must separate itself from other cultures. White culture lasted as the dominant culture in the US only as long as white culture separated itself from the Negro slaves and the Chinese railroad workers. When blacks and Asians are allowed to mix with whites, they will inevitably interbreed and intermarry. Although millions of black plantation workers and Chinese railroad workers were imported to the US, white culture survived by placing severe restrictions on these populations and their activities. When, as today, Asians are invited to come to our country to become managers and professional people, when they are given citizenship and empowered to vote, then they will seduce your sons and daughters, and marry your sons and daughters, and cause your culture to vanish. If a Jewish father does not want his daughter to marry a gentile, then he must not let her date gentiles. As it was crudely put when I was a boy, "People who play together lay together."

The most fundamental decisions of our lives are made largely for us. Our race, our language, our culture, our religion, our nation – for most people, most of these decision are decided at birth, and remain with us for life. Apostasy – the denial of one's religion. Treason – the betrayal of one's nation. Miscegenation – the termination of one's race in his progeny. Adultery – the loss of property rights for one's blood offspring. Why do people feel so strongly about these things? Why are traitors hanged? Why is it the duty of Moslems to kill apostates? Why are adulteresses stoned? It is because these things strike at the heart of one's culture, nation, family, and very existence. Without dictates and mandates against apostasy, treason, miscegenation and adultery, no religion, nation, race, or family can survive.

Is it right to kill a person because of his race, religion, language, or culture? Is it wrong to deny your religion and culture by refusing to do so? The answers depend on your religion and nationality. Acting as an individual, killing is generally wrong. It is wrong as a citizen for many reasons, and it is wrong as a Christian for any reason. Done for his nation in war, however, killing is a patriotic duty and (for most religions) a religious obligation. God has given authority to the nations: as a Christian, you must render unto Caesar what is Caesar's, and defend your nation to the death. And a nation may wage war against any other nation for any reason. Any nation that is unprepared to kill to preserve itself will surely and quickly cease to exist. If it does not defend its boundaries and national integrity, it betrays its citizens and does not deserve to continue to exist. And what is a nation? It is a group of people defined by and bound together by common race, religion, language, and culture. If a nation is not willing to kill to protect these attributes, it will not last long.

Any country that allows aliens to own its land will lose its land. It is illegal for foreigners to own land in Haiti (or, it was the last time I worked there). If it were, Haiti would not be owned by Haitians. Today, a very wealthy individual could

purchase all of Haiti or any other small country. A country that wishes to protect itself cannot allow aliens property rights. Black Haitians possess Haiti today because they were willing to kill for it – to slaughter hundreds of white French landowners – men, women, and children. A culture, a nation, will exist no longer than it is willing to do this.

As noted by Robert H. Bork in his book, <u>Slouching Towards Gomorrah</u>, the moral fiber of America is rotten, infected by radical egalitarianism, radical individualism, permissiveness, self-indulgence, and multiculturalism. He notes that to his knowledge no multiethnic society has ever been peaceful except when constrained by external force. I would posit the exception that a multiethnic society can be peaceful if it is so fabulously wealthy that everyone can be "paid off," as in the present-day US. When the energy is gone, the money will be gone, and multiculturalism will be gone.

As observed by John Vinson (Immigration and Nation, a Biblical View), radical egalitarianism is the sin of envy: "It is the sin of all men who wish to pull down excellence and achievement of other men and to reduce the glory of God." The putative intent of America's affirmative action program was to insure that every American had an equal opportunity. Right from the beginning, however, firms were unable to prove that if the ethnic composition of their workforce did not equal the ethnic composition of the country or local area, it was not the result of racial discrimination. It is often impossible to prove a negative. As a result, the program quickly degenerated into a perverse system of quotas. Any firm not having the right percentage of blacks or females or Hispanics was automatically guilty of de facto discrimination, and sued. The only practical defense was to hire blacks and females and Hispanics in proportion to their numbers in the general population, regardless of qualification. This approach, not only demeaning to the minorities, has infuriated better-qualified individuals who have lost jobs to less-qualified individuals on the basis of race or other minority status.

The US passed the 1964 Civil Rights Act banning racial discrimination, and then proceeded to implement affirmative action to promote racial discrimination.

The US military establishment has failed utterly to defend the country from destruction at the hands of immigration. In most other countries of the world, the army stands by ready to assume the reins of government when the civilian government fails. Not so in the US. In 1965, the country's borders were opened to aliens from all countries and cultures – friend or foe. Since then the country has been invaded by 50 million immigrants and their offspring. The Army has stood by, feckless, effete, as the Immigration and Naturalization Service has allowed the country to be flooded with aliens (both legal and illegal). The Army did not, and now will not and cannot, defend the core American culture. The Environmental Protection Agency has served no better. Because of the massive population growth over the last few decades, the US is now a net importer of wood, and is destroying its "old growth" forests faster than Brazil is destroying its

tropical forests. As the population grows, it becomes impossible to protect wildlife habitat and save vanishing species from destruction. What has the EPA done to restrict human population growth? – nothing!

The continuation of any level of immigration that results in positive growth will ultimately result in a population of size greater than any specified level. Addicted to growth, the US government continues massive immigration year after year. It will not terminate immigration, and because of multiculturalism, it cannot even restrict immigration to skilled workers without cries of racism.

There are virtually no requirements now for US citizenship. It is awarded to virtually anyone. A Mexican whore can slip across the US border, have a child, and it is automatically a US citizen. Then, under the "family reunification" guidelines of current immigration laws, the mother can be granted citizenship. Then the father. Then other relatives, and their relatives, in an endless chain. In the last days of the Roman Empire, Roman citizenship, which had originally been highly prized, was granted to anyone. The US is now in the same phase. US and Canadian citizenship are granted to anyone. It is even sold and raffled off in lotteries. It is used as a prize given to any one or any group we feel sorry for. Many Americans now believe that everyone has a right to be a US resident and become a US citizen, unless you can prove otherwise. Americans no more, as Georgie Anne Geyer observes. We no longer value US citizenship, we no longer defend and cherish it, and it will not last much longer.

It has been estimated that for each immigrant who comes to the US, an acre of land is destroyed, i.e., permanently taken out of agricultural production or natural use, and turned into roads, bridges, parking lots, buildings, and other structures. And much of this is prime natural or agricultural land, because urban areas tend to be located in areas of high land fertility.

In May of 1999 the US Government passed legislation to allow 20,000 ethnic Albanian Kosovars refuge in the US. If the situation in Kosovo improves, they may return to Kosovo or choose to stay in the US. There is little doubt that they will choose to stay. Their arrival represents the permanent destruction of another 20,000 acres of US agricultural land.

Because of immigration (both legal and illegal) since World War II, the US population is at least 100 million higher than it would otherwise have been. Since passage of the Immigration Act of 1965, immigration has caused the country to grow by at least 50 million more than it would have. By the year 2050, it is estimated that US population will increase by about 150 million more than it would have without immigration, since 1970.

What is the impact of 100 million additional Americans? It means that approximately 100 million acres, or 156,250 square miles, of land is permanently destroyed. This is equivalent to an area 395 miles by 395 miles. The US has

187,776,000 ha of arable and permanent cropland. That is about 463,644,444 acres, or about 724,444 square miles. That is an equivalent to an area 851 miles by 851 miles. Immigration is literally devouring the country. Economists may pontificate all they want about how immigrants increase GDP, but the fact is that immigration is destroying our land and wildlife, permanently. Economic activity can be created with the stroke of a pen, simply by placing a numerical value on the exchange of goods or services between human beings. GDP is a nontangible artifact of the human mind. Nature, wildlife, plant and animal species, and the ecosystem are real. Present-day Americans are trading their irreplaceable natural heritage for some numbers (GDP) and industrial waste. They are turning the pristine North America they took from the Indians into a teeming Third-world warren as fast as they can, just for the money. How foolish.

The US government is paralyzed. A democracy can thrive when the population is homogeneous. But the US, via massive, rapid immigration, has been balkanized into a rabble of unassimilated ethnic groups. No politician can stand for anything that offends any minority group, for fear of destruction at the hands of coalitions of minority groups.

With few exceptions, such as Sen. Sam Ervin, America's political leaders have ignored the immigration problem. It has been good for business, and they serve business. As Sen. Ervin anticipated, however, that it would lead to a serious ethnic destabilization, and it has. In 1955, my family never locked the front door to our house, unless we were leaving for vacation. A 1955 Chevrolet had an ignition switch that could be left permanently in an unlocked position. We never locked the car or the ignition switch. There was no need. Crime was very low. Personal safety can no longer be taken for granted. Outsiders were not allowed to come into our neighborhoods. Transients and loiterers were arrested. Many people alive today do not realize how dramatically the quality of life has fallen for the average American since 1950. While not all of the negative change in the quality of life can be attributed to immigration, much of it can. The tremendous increase in the number of people and the tremendous increase in ethnic diversity have caused a tremendous destabilization. The US is not longer the stable, united country that it was fifty years ago.

In summary, the US is effectively finished as a nation. It no longer has a cultural identity, or core, defining it as a nation and giving it unity, strength, meaning and purpose. As Gordon Gibson observed in his article, "If Quebec goes, how much territory will go with it?" in the February 4, 1997 issue of The Globe and Mail (Toronto), any time the real law is raw power, four things matter: the balance of resources, control of the ground, the skill of the generals and the resolve of the parties. The US has lost its resolve, the will to preserve its core culture. It will last only as long as the money holds out.

<u>Damage from the "Combination" Minimal-Regret Attack</u>. As shown in Figure 40 (United States) of Appendix G, the US suffers massive losses in the

"combination" attack (as well as in the other three attacks) – 182 of its cities of population over 100,000 are attacked, targeting 90% of its city population. All of the major Hispanic-dominated cities of the country (e.g., in California, Texas, and Florida) will have been destroyed. The 100,000 Vietnamese living in San Diego would be gone. Since much of rural America is white, English-speaking, European Christian culture, the cultural unity of the country will have been dramatically enhanced. At this time, the various militias that are active in the US will come to the fore, and assert control over their bailiwicks. Be kind to your local militia -- it is all that will stand between you and anarchy after the war.

If all population in the targeted cities is destroyed – a total of 197 million people – then the remaining population will be 74 million (using today's population of 272 million). The total cropland area of the US is 187,776,000 ha (FAO Production <u>Yearbook 1996</u>; figure is for the year 1995; "cropland" includes arable land (for temporary crops) and permanent cropland). After the war, agricultural yields will plummet, from being able to provide food (and a little energy) for up to 10 people per hectare to perhaps 1 person per hectare. Hence, the (arable and permanent) cropland area of 188 million ha will easily support 74 million people. That was the population of the US about the year 1900.

Hence, after the war, the US will be in the position of having a high degree of cultural homogeneity, and sufficient land to feed its population, even at a preindustrial level of agriculture (using horses, since America has depleted its petroleum supplies). The US abandoned its Civil Defense program decades ago. After a nuclear war, the remaining population – small towns and rural population – will be on its own, with only local militias to defend it. It has no defense against nuclear war, even the low-intensity war described in this book. Such a war can happen very easily, yet America has made no preparations to protect itself in the wake of such a war. Like the grasshopper in Aesop's fable, it has fiddled during the summertime when it could have prepared for winter. And it will be a very cold winter indeed!

It seems that America's leaders have chosen to ignore the possibility of nuclear war and its aftermath, that it is a game that they just don't want to play. In view of the fact that this type of war is quite feasible and increasingly likely, this position is rather incredible. It may be that no preparations have been made because the thought of nuclear devastation is difficult to face, or it may be a case of "discounting in time and space." It may be a case of denial, analogous to the person dying of cancer who simply cannot face the truth. If so, that is their choice, unfortunate as it may be for the American survivors. Nuclear war will happen, and when it does, those who have prepared for it will survive. America has abandoned its postattack survivors. It has made a de facto choice to cease to function as a nation following a nuclear war.

## <u>Canada</u>

<u>Cultural Status</u>. The situation in Canada is in many respects similar to the situation in the US. Canada has embarked on a massive immigration program. Its population has doubled since 1950, from 14 billion to twice that level. Canada is more highly culturally fragmented than the US. Canada contains six million French-speaking people and 14 million English-speaking people (see <u>Ethnologue: Languages of the World</u>, 13<sup>th</sup> edition, by Barbara F. Grimes, ed., or <u>Countries, Peoples and Their Languages: The Geolinguistic Handbook</u>, by Erik V. Gunnemark, for data on the cultural and linguistic composition of countries). Other languages are growing, as Canada accepts a massive number of immigrants from around the world.

Vancouver is now heavily Asian; it is referred to as North America's Asian capital. Toronto has a large and growing Asian population – about half a million immigrants have settled there since 1990. Both Toronto and Vancouver are comprised of about one-third minority population. When I lived in Canada in the 1940s, it was a country of British character and French character. It is now a multicultural potpourri. As noted by Peter Brimelow in <u>The Patriot Game:</u> <u>Canada and the Canadian Question Revisited</u>, Canada is comprised of at least two and conceivably seven incipient subnations. As I mentioned, I lived and worked last year in Toronto. English-speaking Canadians have given up control of the country for which Wolfe gave his life on the Plains of Abraham in 1759. What he gave his life for – a British Canada – is of no value to present-day Canadians of British heritage. Not only will they not fight to preserve it, they are admitting Third-World aliens to it as fast as they possibly can, to destroy its British character utterly.

A Canadian friend of mine – of English extraction – returned recently to Canada after a business trip. As he entered the airport, a "welcomer" greeted him and other arriving passengers. With beaming smile, the greeter exclaimed in a heavy eastern-European accent, "Vaalcome to my caahntry!" My friend was stunned. He had thought that Canada was **his** country – **his** ancestors had carved it out of the wilderness and fought bloody battles to take it from the French. Sorry, pal, but your generation just gave your country away. Will you ever get it back? Only by paying the same price that your ancestors did. To acquire a country and to keep it, it is necessary to fight and die and kill for it. As Thomas Jefferson stated, "The tree of liberty must be refreshed from time to time with the blood of patriots and tyrants." English Canadians are no longer willing to pay this price, and so they are no longer in control of Canada.

The Toronto Star carried a telling story last year concerning the perception of its French speaking minority. A French-Canadian lawyer objected to the use of the term, "the Canadian people." He argued that there is no such thing as a "Canadian people." There is an English-speaking people, and a French-

speaking people, and various other peoples, but no Canadian people. He was right on the mark.

At this point, Canada has no cultural identity at all.

Damage from the "Combination" Minimal-Regret Attack. As shown in Figure 40 (Canada), 25 of Canada's 47 cities having populations over 100,000 are attacked, resulting in the targeting of 86% of the city population. This corresponds to about 18 million population killed, leaving a population of about 12 million, or about what it had in 1941. Canada has 45,500,000 ha of (arable and permanent) cropland, which will support about 45 million people at a level of 1 person per hectare.

Since Canada's recent immigrants have settled mainly in the cities, they will be largely wiped out. The remaining population will be largely English and French, in about the same ratios as at present (14 English to 6 French). The country will immediately fragment into local fieldoms.

## <u>Brazil</u>

<u>Cultural Status</u>. A total of 154 million of Brazil's total population of 161 million speaks Portuguese, and the remainder speak a wide variety of native and immigrant languages. There are at least one million speakers of immigrant languages, mainly Italian, German and Japanese, and more than 150,000 speakers of 150 Amerindian languages. The country is mainly Roman Catholic.

Brazil has shown little interest in preserving its vast tropical forest. It is rapidly destroying it. It has a strong program to develop its entire expanse. When criticized by the US for doing this, it takes offense, claiming that the US is in no position to criticize since it destroyed much of the forest and wildlife in North America. The implication is that since the US destroyed much of the forest and wildlife in North America, it has just as much right to do so in South America.

<u>Damage from the "Combination" Minimal-Regret Attack</u>. As shown in Figure 40 (Brazil), 86 of the country's 187 cities of population over 100,000 are attacked, resulting in population casualties of 80%, or about 56 million. This leaves a total of about 105 million remaining.

The cropland area is 65,500,000 ha, which can support 65 million people at a low level of agriculture (1 person per hectare). This falls quite short of the remaining population of 105 million.

### Russian Federation

<u>Cultural Status</u>. Of the total population of 148 million, most speak Russian, but many other languages are spoken.

<u>Damage from the "Combination" Minimal-Regret Attack</u>. As shown in Figure 40 (Russian Federation), 68 of the 165 cities of population over 100,000 are attacked, resulting in casualties of 76%, or about 54 million. This leaves a remainder population of about 94 million.

The cropland area of the Russian Federation is 132,980,000 ha, which can support about 133 million people at a low level of agriculture (1 person per hectare).

## <u>China</u>

<u>Cultural Status</u>. Chinese is the home language of over 1.1 billion of the 1.2 billion Chinese population. There are five main varieties of Chinese; many other languages are spoken.

<u>Damage from the "Combination" Minimal-Regret Attack</u>. As shown in Figure 40 (China), 270 of the 371 cities of population over 100,000 are attacked, resulting in targeting of 93%, or about 308 million, of the total city population of 332 million. This leaves a remainder population of about 907 million out of the total 1.215 million.

The cropland of China is 95,843,000 ha, which can support about 96 million people at a low level of agriculture (1 person per hectare).

The preceding paragraphs have summarized the postattack situation for a few of the countries that are attacked in the "combination" minimal-regret attack of 1,000 weapons. Recall that 122 countries are not attacked at all under this attack. The situation varies substantially from country to country. In some cases, the remaining population is sufficiently small to be supported at a low level of agriculture, but in others (e.g., Brazil) the remaining population is still too great to be supported by the land.

In cases where the minorities tend to live in cities, such as in the US and Canada, the population is more homogeneous culturally after the attack than before. In others, such as Brazil and Russia, the cultural situation would not change much.

In conclusion, following the attack a large number of countries would still have large remaining populations, but not necessarily so large that the remaining populations could not be supported by low-level agriculture on the country's arable land. The import of this is that if a single country is to prevail after a minimal-regret war of just 1,000 nuclear bombs, it is going to have to face a lot of formidable adversaries. In particular, China's population remaining after the attack is still massive (892 million), even after 270 of its cities are attacked.

This situation is as follows. Although a low-intensity attack of 1,000 atomic bombs can destroy a large proportion of the world's city population, after the attack there is still a large population remaining. It would represent a formidable challenge for any single country to attempt to assume world control after this low-level attack. The country having the best chance of doing so would be China, with a postattack population of almost 900 million.

What are the implications of this? There are several. First, if China is to be defeated, it will have to be attacked with a much larger number of weapons. Since China does not allow foreign immigration and maintains tight control of its borders, the task of simultaneously placing suitcase bombs in any number of Chinese cities is rather formidable. It is, of course, not impossible, since many Chinese have emigrated to other countries. But it may be that the best way to destroy China is by means of a ballistic missile attack. Here we get into gametheoretic aspects. Since China knows that it must be destroyed and that it can be destroyed only by a massive nuclear attack, it is in its best interest to attack first. But this means attacking all other nations of the world, and China's current nuclear inventory (450 warheads) is inadequate to do this. If it decides to embark on a program of increasing its inventory substantially (to a level of thousands of warheads), it must do so before the US builds the space-based laser system (which can destroy missiles as they are launched). Since plans are proceeding to build a demonstrator satellite for that system, the Chinese don't have a great deal of time to build up their nuclear arsenal.

Since China is not in a position at the present time to launch a successful attack against the rest of the world, what are the alternatives? Both the US and the Russian Federation have sufficient inventories of nuclear weapons (over 10,000 each) to launch a massive attack on all of the cities of the world. Although the US is not doctrinally opposed to a nuclear first-strike, it is culturally opposed to doing so. Such an attack is hence somewhat unlikely to come from the US, unless a small group could take control of the country's nuclear launch function. This would be somewhat difficult, because the US military could probably prevent it. It is not impossible, however, because the multiculturalism that has consumed the civilian sector of the country is evident in the military as well.

So China is not presently capable of launching a preemptive attack on the rest of the world, and the US is not inclined to do so. That brings us to Russia. Russia has the nuclear capability (weapon stockpile plus missiles and aircraft to deliver them) to launch a major attack on the world's cities (assuming that the space-based laser system is not yet operational). This is a rather interesting situation,

since the predominant interpretation of Biblical prophecy is that the final war ("Armageddon") will be initiated by Russia, and involve an Oriental army of 200 million men – which can only be China, in today's world. Russia knows that it cannot defeat China on the land, so it must destroy it using missiles or aircraft. China knows this, and cannot be expected to sit idly by while it happens.

#### Summary

The primary purpose of this book is feasibility assessment, not prediction. It is concerned with survival strategies for the planet, not for a particular nation or group. The preceding chapters have shown that it is indeed feasible for a low-level nuclear attack to do significant damage to the world's urban population, but not to wipe it out. The results of this chapter show that, by itself, a low-intensity nuclear attack (1,000 weapons) is not sufficient to destroy much of the world's population. It would appear, then, that while a low-intensity nuclear attack may be part of a minimal-regret strategy, it must be complemented with other actions to succeed.

The Book of Revelation states, "A third of mankind was killed by the three plagues of fire, smoke, and sulphur...." (Rev. 9:18). Based on the analysis presented here, a low-intensity attack of 1,000 weapons on the world's most populous cities has direct casualties of only about one-fifth of mankind, not one-third of it. Of course, since the 1,000 weapons are all surface bursts, a massive amount of radioactive fallout will be produced, and this fallout could easily kill another fifth. It would also poison the land and water with radioactivity, making it useless for agriculture. As Jesus said, referring to the End of the Age (Matt. 24:19), "How dreadful it will be in those days for pregnant women and nursing mothers!"

Much additional analysis is warranted, particularly in the area of game theory. Game theory is well established for two-person games and for games involving many players, but it is not well developed for games of a small number of players greater than two.

### XV. What to Do after the War?

The preceding chapter shows that, after a 1,000-weapon war, a substantial population remains, and that a larger-scale war is necessary to accomplish defeat of all of the world's countries. As discussed earlier, nothing changes in the long run unless a single nation or group takes charge after the war, and moves to maintain global population at a low level. After the nuclear war, the key issue to address is whether a single nation or organization could prevail over (i.e., defeat) each and every one of these remaining countries.

The prospect of conventional war with one or several or all of these remaining countries is rather sobering. If these countries realize what is happening, they will surely ally in an attempt to destroy any single nation or group committed to the elimination of economic activity. To reduce or eliminate this possibility, one approach is to target one nuclear weapon on each of these countries, or at least to each one with population in excess of a specified size, such as one million. With this approach, all of the potential opponents to the single nation are weakened, and the likelihood of success is substantially enhanced.

One of the countries surviving the "combination" attack, of course, could serve as the single nation in charge of a minimal-regret population. In order to be sustainable, the single nation must be homogeneous with respect to race, language, religion, and culture. Russia scores high on these factors, as does China. Although the US does not at the present time, it would after a low-intensity attack. A list could be constructed of ethnic homogeneity scores, but that would require a data collection effort that was beyond the time limitations placed on this book.

Of the several countries discussed above, at the present time only the US and Russia have the wherewithal to accomplish the objective of becoming the single industrialized controlling nation. China will, too, before long. A problem that arises for any of these is that they all have large populations, and are historically committed to large populations. Not one of them fits the concept of a "single industrialized country of five million people," that was mentioned earlier in the discussion of a minimal-regret planetary population concept. If any one of them were to manage assumption of world control and then continue to promote a highly industrialized level of living for its own large population, the situation would not be much improved, if improved at all, from the current situation. This aspect is not addressed here, and warrants further consideration.

Assuming that a single nation or group is successful in defeating all others after a nuclear war, the issue arises concerning the elimination of economic activity worldwide. Following the attack, some countries will still have very large residual populations. Except for China, it is out of the question to attempt to defeat these countries by means of conventional warfare. This probably means that the single

nation in charge will have to possess a strong air force, missile force, or a strong space-based military capability.

Two promising new technologies on the horizon may play a role in the maintenance phase. The space-based laser mentioned above is one of these. Few people realize that a major factor in the decision to abandon work on the Strategic Defense Initiative ("Star Wars") was the inability to process the massive amount of information about a missile attack, once the attack has been launched. The enemy can not only launch multiple independently targetable reentry vehicles, but decoys as well. Until they are slowed down by reentry into the atmosphere, these decoys are essentially indistinguishable from real warheads. The problem of attempting to correlate and track all of the ballistic missiles and discriminate decoys from real warheads in a large-scale ballistic missile was not solvable, even with all the computer power in the world.

Furthermore, even if the correlation/tracking and discrimination problems were solved, the attacker may employ a "ladder-down" attack. In such an attack, the attacker explodes a nuclear weapon in space, to destroy nearby communication satellites. Also, the ionized-gas "fireball" or "cloud" completely blocks out communications, even for surviving electronic systems. The attacker's missiles fly through the fireball. As soon as they come through, a second nuclear bomb is exploded. This process is continued, generating a sequence ("ladder") of fireballs that mask the attack all the way down.

The space-based laser uses a radically different approach. Under this concept, the system destroys all missiles as they take off. No missile is allowed to leave the ground. The intractable problems of correlating and tracking large numbers of missiles and decoys, and of "ladder down" nuclear blackouts are simply eliminated.

The space-based laser can play a role in eliminating economic activity after a nuclear attack. Global surveillance systems can detect such activity and destroy it. The space-based laser system can help push the industrial world "back to the Stone Age."

A second new development that holds promise for the maintenance phase is that of very large-scale dirigibles. Once the threat of conventional response (surfaceto-air missiles, aircraft) has been eliminated, dirigibles offer a very efficient means of patrolling the planet, and destroying any signs of economic activity.

The preceding chapters show that it is possible by means of a small nuclear war to destroy a major portion of the world's city population and industrial capacity. The potential then exists for a single nation to take charge of the planet, and maintain it in a positive, controlled fashion.

## XVI. The Role of Religion

There are probably several ways a global nuclear war could start. A nuclear war between two nations or groups of nations was a very real possibility during the "cold war" era. As mentioned earlier, a localized nuclear war, even if it totally destroyed the US or Russia or several other countries, would by itself cause little ultimate change in global population. This chapter explores circumstances under which a nuclear war aimed at establishing a minimal-regret population might occur.

First, it seems clear that such a war would have to be religiously motivated. We are talking here not just about killing on the order of six billion people: an ambitious or evil man could do this without batting an eye. The essential difference between a "minimal-regret" war and most others is the goal of destroying the world's industrial capacity and economic basis. Most wars are motivated by a desire to acquire economic power, not destroy it. With the goal of economic power removed, some other intangible goal, of substantially greater importance, would have to take its place.

Could not the rational goal of saving the planet's ecosystem be goal enough? Evidently not, in view of recent history. The process of destroying the world's ecosystem is now well under way, and has been under way for a long time. The number of people who have killed, or even been willing to lay down their lives for, other species or future generations is essentially zero.

Barbara Ehrenreich, in her book <u>Blood Rites</u>, discusses the intimate relationship between war and religion. While one man's killing another is frowned upon as murder, the accomplishment of killing tens of thousands of the enemy on the field of battle is a socially acceptable, prayed-for, glorious gift of God. General Robert E. Lee once remarked, on surveying a battlefield, "It is well that war is so terrible. We should otherwise grow too fond of it."

If God does not wish for a war to reduce human population to a sustainable level, He will not allow it to happen. But all of Biblical history shows that war is one of His principal instruments. When God delivered the Jewish people out of Egypt and brought them to the Promised Land, He instructed them to annihilate every man, woman, and child of the thirty-one tribes that already occupied this land. Genocide? Of course. A holocaust? Certainly, for the thirty-one tribes who happened to be in the way. But for the Jews who slaughtered the previous residents of the Promised Land, it was simply carrying out the will of God. In fact, according to God, the Jews did not even deserve the victory. "It is not because of your righteousness or your integrity that you are going to take possession of their land; but on account of the wickedness of these nations." (Deut. 9:5). Whole civilizations may be destroyed by a handful of dedicated men. The Aztec and Incan empires were at the height of their glory when small bands under Hernando Cortés and Francisco Pizarro brought them to their ends. As Michael Hart observed (<u>The 100: A Ranking of the Most Influential Persons in History</u>), "Pizarro's conquest of an empire of over six million with a force of only 180 men is the most astonishing military feat in history." The odds against Cortés, although not at great, were also incredible. He defeated an Aztec empire of five million with a force of just 600 men.

Annuit coeptis. He has favored our undertaking. In God we trust. It was considered "manifest destiny" for the US to occupy North America "from sea to shining sea." The fact that the land had been occupied for thousands of years by the resident Indian population was of no consequence.

God does not shrink from bloodshed. He has already destroyed mankind once, via the Flood. If He has no objection to a minimal-regret war to establish sustainability, it may or may not happen. If He desires it, it will surely happen.

And, according to the Bible, there is every indication that He does desire it. Most of the books of the Old Testament document war, not peace. It is war, not peace, that drives men and nations to religion. The books of Revelation, Daniel, Ezekiel, and others contain much prophecy about the destruction of the world by war. In the Book of Revelation, it is written,

"Come, I will show you the punishment of the great prostitute who sits on many waters. With her the kings of the Earth committed adultery and the inhabitants of the Earth were intoxicated with the wine of her adulteries.... The waters you saw, where the prostitute sits, are peoples, multitudes, nations and languages.... The woman you saw is the great city that rules over the kings of the Earth.

"Therefore in one day her plagues will overtake her: death, mourning and famine. She will be consumed by fire, for mighty is the Lord God who judges her.

"When the kings of the Earth who committed adultery with her and shared her luxury see the smoke of her burning, they will weep and mourn over her. Terrified at her torment, they will stand far off and cry: 'Woe! Woe, O great city. O Babylon, city of power! In one hour your doom has come!'

"The merchants of the Earth will weep and mourn over her because no one buys their cargoes any more – cargoes of gold, silver, precious stones, and pearls...and the bodies and souls of men. They will say, 'The fruit you longed for is gone from you. All your riches and splendor have vanished, never to be recovered.' The merchants who sold these things and gained their wealth from her will stand far off, terrified at her torment. They will weep and mourn and cry out, 'Woe! Woe, O great city.... In one hour such great wealth has been brought to ruin." It is often said that the prophecy of the Book of Revelation and the other apocalyptic books of the Bible are abstract and difficult to understand. The preceding passages are not abstract or difficult to understand. It states quite plainly that the great city that covers the Earth and seduces mankind with material wealth will be destroyed, in an hour. That is about as clear and explicit a statement as can be made.

And what about who will accomplish this. The man or organization that destroys the city and assumes control of the planet is referred to as the "beast." With respect to the beast, it is written:

"The beast and the ten horns you saw will hate the prostitute. They will bring her to ruin and leave her naked; they will eat her flesh and burn her with fire. For God has put it into their hearts to accomplish his purpose by agreeing to give the beast their power to rule, until God's words are fulfilled."

In other words, God will give the beast (world dictator) the authority to rule over mankind, after destroying the city that covers the Earth.

Well, you may say, that is all well and good, but just because it is in the Bible doesn't mean a thing. Well, it doesn't really matter whether you believe it or not. What matters is that billions of Christians and Jews believe it. And when it happens, they will view it as the fulfillment of Biblical prophecy, and accept it. If there is a nuclear war, the move by a single group to assume control of the planet will be viewed as a natural, God-directed, inevitable event.

What about Islam, the third great monotheistic religion of the world? Many Christians do not realize how similar in many ways Islam is to Christianity. The Biblical prophets and history are subsumed into Islam. The Koran teaches of the Day of Judgment, when Jesus shall return. (Toby Lester's article, "What is the Koran," in the January 1999 issue of The Atlantic Monthly, provides additional details on the similarities of Christianity and Islam.) There are, of course, many differences. The Koran does not dwell on Armageddon or the reign of the beast. In Islam, historical Jesus was a man – a prophet – but not God. "You cannot crucify God," a Moslem friend of mine once told me. According to the Jewish scriptures, Abraham almost sacrifices his son Isaac, progenitor of the Israeli people; according to the Koran, Abraham almost sacrifices his son Ishmael, progenitor of the Islamic people. The concept of the Trinity and the intermediary role of priests, introduced by the Roman Catholic Church, are not part of Islam. Islam rejected the intermediary role of priests just as did Martin Luther in the Protestant reformation. Jesus was a man of peace, whereas Muhammad was a man of violence and war. The Koran exists only in Arabic; the Christian Bible may be translated. (That the Islam's holy book, the Koran, exists only in Arabic is considered an important factor restricting the spread of Islam in the modern

world; on the other hand, the unifying influence of the Koran on Arabic language, culture, and thought is undeniable.)

Christianity, Judaism, and Islam vary significantly with respect to the relationship of religion to the state. When asked about this relationship, Jesus' response was, "Render unto Caesar what is Caesar's, and unto the Lord what is the Lord's." As discussed at length by D. H. Lawrence in <u>Apocalypse</u>, Christianity is a religion for individuals, not for states. It is impossible for any state to "turn the other cheek" and continue to exist. This is not true of Judaism or Islam. Both are quite comfortable with a religious state. The concept of "jihad," or holy war, to defend and spread the faith is a dominant part of Islamic culture. All three religions are quite comfortable with slavery, but with some restrictions that will be discussed later.

What does all this mean with respect to a "minimal-regret" war to impose a single planetary government? What it means is that Christianity and Judaism expect it, and Islam is unopposed – if it happens it is the "will of Allah." In Biblical prophecy, however, the entity that rules the world after the war of destruction of the cities is not Christian or Jewish, but a dictator authorized and empowered by God.

There is a large literature on prophecy, both Biblical and other. Some of the recent (in-print) books on this subject are the following:

- 1. <u>The Bible</u> (books of Revelation, Daniel, Ezekiel, Jeremiah, Matthew, Mark, Luke, John).
- 2. <u>Apocalypse</u>, by D. H. Lawrence
- 3. <u>Observations Upon the Prophesies of Daniel, and the Apocalypse of St. John,</u> by Sir Isaac Newton
- 4. The Late Great Planet Earth, by Hal Lindsey with C. C. Carlson
- 5. Apocalyptic Literature: A Reader, by Mitchell G. Reddish, Editor
- 6. The Millennium Book of Prophecy, by John Hogue
- 7. Millennium Prophecies, by A. T. Mann
- 8. Prophecies for the New Millennium, by James Manning
- 9. <u>The Mayan Prophecies</u>, by Adrian G. Gilbert and Maurice M. Cotterell

[A digression...please pardon the scientist in me. To me, it is very interesting that Sir Isaac Newton, regarded by many as the most influential scientist of all time (Hart's <u>The 100</u> lists him second, after Muhammad and before Jesus Christ and Buddha) was fascinated by biblical prophecy. His book, <u>Observations Upon the Prophecies of Daniel</u>, and the Apocalypse of St. John is 323 pages long.

Newton's book on the prophecies of Daniel has an interesting history. This book was reprinted by Arthur B. Robinson in 1991. Robinson's edition (ISBN 0-942-487-02-8) is a photographic copy of Thomas Jefferson's personal copy of the original Darby & Browne edition published in 1733 (six years after Newton's

death). It is interesting to note Newton's objection to the use of prophecy to predict the future emphasis of the proscription on assigning dates to Biblical prophecies, as is much done today.

[Robinson's discussion of the relationship of Newton's laws to Einstein's theory of relativity is also worth retelling. It is often said that Newton's second law of motion was slightly incorrect, and that Einstein's theory of special relativity corrected it. But as Petr Beckman notes in <u>A History of Pi</u> (recently reprinted by Barnes and Noble, ISBN 0-88029-418-3), Newton's original formulation was completely correct. The second law of motion states that force is the time derivative of the product of mass times velocity

$$F = d(mv)/dt$$
.

[What was done by many people following Newton was to assume that mass was a constant, so that it could be taken outside of the derivative:

$$F = m dv/dt$$
 .

[Once this is done, the equation is no longer consistent with special relativity – but Newton did not do this!

[As an aside, in no way is the preceding observation meant to diminish Einstein's theory of relativity. It is an incredible accomplishment. What is truly amazing is that he did not develop his theory on the basis of empirical measurements, but on the basis of the beauty, elegance, and symmetry of the universe. (For more information about Newton and Einstein and other influential figures, see Michael H. Hart's <u>The 100: A Ranking of the Most Influential Persons in History</u>, Revised and Updated 1992, Citadel Press.)]

The last four books in the list given above include prophecies from all cultures, not just Judeo-Christian theology (e.g., Nostradamus, Siener Nikolaas van Rensburg, Edgar Cayce, Mayan prophecy).

Much has been written on the art of war. Sun Tzu recognized that war was not a transient aberration for man, but a conscious recurrent state into which, and quite subject to rational analysis. Von Clausewitz asserted that war is a normal phase in the relations among states. John Keegan, in <u>A History of Warfare</u>, explores the historical, psychological, and sociological aspects of war, as does Barbara Ehrenreich in the work cited earlier. The Discovery Channel's <u>War and</u> <u>Civilization</u> television series presents the entire history of human warfare. Niccolò Machiavelli explores means of acquiring and maintaining political control.

With respect to damage to the planet's ecosystem, peace has been far more harmful than war ever was. Mankind has not been able to handle peace. Peace

is currently destroying the planet! Peace without war is not in the cards for man. It is war, not peace, that defines human history.

To many, war is a truly religious experience. A few months ago, I had the opportunity to spend some free time at the Chittagong War Cemetery 1939-1945, a small but very peaceful and well-maintained, World War II cemetery in Chittagong, Bangladesh. Chittagong is quite near the Burmese border. Soldiers there saw ground action with the Japanese, and many allied airmen lost their lives in desperate missions from whom many never returned. I copied down a number of the inscriptions of the tombstones; some of them are listed in Appendix J.

One cannot be unmoved by the ultimate sacrifice of these men and their loved ones. As General Patton once remarked, "Compared to war, all other forms of human endeavor pale in significance."

### Ecclesiastes 3:1-8

There is a time for everything, and a season for every activity under heaven:

At time to be born and a time to die,

A time to plant and a time to uproot,

A time to kill and a time to heal,

A time to tear down and a time to build,

A time to weep and a time to laugh,

A time to mourn and a time to dance,

A time to scatter stones and a time to gather them,

A time to embrace and a time to refrain,

A time to search and a time to give up,

A time to keep and a time to throw away,

A time to tear and a time to mend,

A time to be silent and a time to speak,

A time to love and a time to hate,

A time for war and a time for peace.
XVII. Socio-political Characteristics of Energy-Rich and Energy-Poor Societies

With respect to energy availability, there has never been a society like the present one, and there never will be again. The current human generation is consuming, in an evolutionary instant of time, the fabulous fossil-fuel storehouse of energy that has been and will be stocked only once in the evolution of Earth. Western society in general, and the US in particular, is awash in energy. In today's world, energy is essentially free, and available on a massive scale – it is simply pumped out of the ground. The average energy cost of extracting the oil, gas, or coal is but a small percentage (e.g., 10-20%) of the energy obtained.

The massive amount of energy available to common citizens enables them to live like kings. In fact, many live far more comfortably than kings of earlier times. In terms of the services at his disposal, each US citizen is served by the equivalent of hundreds of slaves.

What has all this essentially free energy accomplished? It has enabled the US to transform itself into an egalitarian multicultural society. This type of society has never existed before. Multicultural societies have certainly existed before. Under slavery, the US population contained as many as 20 percent blacks overall, and up to 50 percent in some areas. India contained a variety of different castes, the members of which lived rigidly separate from each other. At its peak, the Roman Empire consisted of up to 40 percent slaves. What is different now is that the various cultures in the US – various races, religions, and cultures – all enjoy the same basic rights of citizenship.

It appears that all races have been slaves and owned slaves. The slave status of a child was usually determined by the slave status of the mother. One of the problems of slavery is that, after a few generations it becomes difficult to distinguish slaves from masters. The race-based slavery of North America minimized this problem by using skin color as a social marker. The Romans avoided the identification of slaves for security reasons ("Every slave we own is an enemy we harbor") – they decided that they did not want the slaves to realize just how many of them there were, and be motivated to rebel. The rebellion of Spartacus confirmed their worst fears.

Because of access to an incredible amount of energy, all citizens can enjoy a high level of rights. In his book, <u>Slouching Towards Gomorrah</u>, Robert Bork describes the radical individualism and the radical egalitarianism of US society. In an energy-poor society, common citizens would never be permitted the freedom of expression, freedom of activity, freedom to waste, that exists in the US today.

Women enjoy the same rights as men today because of energy. It is energy that has freed women from household chores to pursue the same jobs as men.

Blacks enjoy the same rights as whites today because of energy. Massive numbers of Hispanics and Asians who cannot even speak English are permitted, even sought, in the US because of energy. Since everyone has access to an incredible standard of living, there is little need for a second class of citizens. Real slaves have been replaced by energy slaves.

In today's high-energy society, women can do all that men can do. There is really just one area in which men truly outperform women. Men are natural-born killers, and women are not. A man in war can pick up a baby by its heels, swing it through the air, and smash its skull against the wall. A man can rip an assegai or bayonet into another man's belly and disembowel him. In a high-energy environment, war is clean. A woman can press the button to release a cruise missile as easily as a man. When energy is gone, however, it will be back to basics, and men will once more be in charge of the fighting.

In earlier times, massive immigration to this country was permitted because the country still had land that could be taken from the Indians and given to immigrants. Later, when the land was gone, immigration continued because access to energy enabled large numbers of people to live in cities. The percentage of the population needed in agriculture to feed the urban population declined steadily, and the urban population grew.

In the US today, it is illegal to discriminate in employment and certain other areas with respect to age, sex, race, religion or national origin. All of these privileges arose because of access to large amounts of low-cost energy. And they will all disappear when energy is no longer essentially free.

You read from time to time that slavery is gone, that inequality among religious groups and ethnic groups is reduced, because modern America has a higher sense of morality than our ancestors did. Nothing is farther from the truth. As noted earlier, America is far less religious and moral than before. The reason why multiculturalism, radical individualism, radical egalitarianism, permissiveness inclusiveness, and pluralism are pervasive is because no one is hurting. In America, the "pie" is very large, and everyone gets a big slice. With respect to morality, America is truly "slouching toward Gomorrah," as Robert Bork notes. Rights are high in America because "the rich can afford to be virtuous," not because America's morality is growing stronger. Morality in America is decreasing, not increasing.

When cheap energy is gone (and the word is WHEN, not IF), the profusion of rights and privileges will disappear. Present-day life in America is not in any sense a "zero sum game." That someone has a high material lifestyle does not mean that someone else must go without. Because of access to massive amounts of low cost energy (and the technology to utilize it, of course), every one can have a lot. The waste, the species destruction, the pollution, the environmental destruction – for the time being, all of these external costs can be

simply pushed off on someone else living in another country or a later generation.

What are rights? Rights are privileges granted to the members of a society, and they last only as long as the society can maintain itself and chooses to enforce those privileges. There are no "inalienable human rights." Rights exist only in the context of a government and its laws. If your country is conquered, you do not have the right to the air in a jug. Americans enjoy an incredible degree of freedom and rights because America is a very wealthy country. When America falls, all of those rights will be gone. The right to employment or housing without regard to race, religion, gender, or national origin will be gone. The right to be a trial by a jury of peers will be gone. The right to be free from cruel and unusual punishment will be gone. The right to life will be gone.

Without a government to back them up, statements of "rights" are meaningless. The 1948 UN Declaration of Human Rights and all the statements of rights that followed it are nothing more than worthless scraps of paper without a government to back them up. Once food and defense are taken care of, everything else that a government spends money on is discretionary. In a highenergy environment, a lot of attention may be paid to human rights. In a lowenergy environment, "rights" of minorities, which are difficult and expensive to enforce, are the first things to go.

When times get hard and there is no longer a near limitless abundance, people will look to any differences as a basis for obtaining more of the limited resources for themselves. Differences in race, differences in religion, differences in language, differences in ethnicity and national origin. This is obvious. Look at the world's "hot spots." The war in Rwanda: differences in ethnic groups. The friction in Northern Ireland: religion. The problem in Yugoslavia / Serbia / Kosovo: religion. The problem in Indonesia: race, religion, and ethnicity. The Sinhalese/Tamil problem in Sri Lanka: ethnicity.

The point is not that one race or religion is better or worse than any other. The point is that when push comes to shove, someone has to be killed, and there must be some basis, some rationale for doing this. That's where differences – **any** kind of differences – come into play. It doesn't really matter what race, religion, language, or nationality you were born into. As a human being, you must accept a cause and take a stand, as arbitrary as it may be or seem. Ultimately, you will be called to and must decide to kill for your cause (nation, race, religion) or you will be killed by someone else who is willing to fight for his. You must take a stand for your cause, or you will surely die for someone else's.

There is a lot of talk these days about "ethnic cleansing." When free energy is gone, ethnic cleansing will prevail. The recent ethnic cleansing in Rwanda and the current ethnic cleansing in Kosovo are simply manifestations of what

happens when too many people occupy a region or depend on limited resources. Someone has to go, and the way to accomplish this will revolve around race, religion, language, and ethnicity. Slobodan Milosevic is not the cause of the ethnic cleansing in Kosovo. The cause is overpopulation. If he were not promoting ethnic cleansing, someone else would be, sooner or later. The world is going to see a lot more ethnic cleansing in the years ahead, as human population explodes and energy reserves deplete. Ethnic cleansing is not the problem; it is merely a symptom.

In a world filled with people, there are two ways of establishing a new nation -subjugation of the current residents, or ethnic cleansing. Neither approach lasts forever, but ethnic cleansing appears to have a greater degree of permanency. The US practiced ethnic cleansing big time when it decimated the American Indian tribes to take over their lands. The Spanish wiped out the local Indian tribes in Costa Rica and Argentina. America was founded on ethnic cleansing and genocide. The US has a bloody history of ethnic cleansing and genocide, spanning centuries. For it to criticize Milosevic is laughable. It has no moral authority in this realm.

The Israelites annihilated thirty-one other tribes to take over the Land of Canaan. The Book of Deuteronomy set the ground rules (Deut. 20:16): "...in the cities of the nations the Lord your God is giving you as an inheritance, do not leave alive anything that breathes." Jericho was the first to be destroyed. Joshua 6:21: "They devoted the city to the Lord and destroyed with the sword every living thing in it -- men and women, young and old, cattle, sheep and donkeys." The next tribe to fall was Ai. Joshua 8:24: "When Israel had finished killing all the men of Ai in the fields and in the desert where they had chased them, and when every one of them had been put to the sword, all the Israelites returned to Ai and killed those who were in it. Twelve thousand men and women fell that day -- all the people of Ai.... So Joshua burned Ai and made it a permanent heap of ruins, a desolate place to this day. He hanged the king of Ai on a tree and left him there until evening. At sunset, Joshua ordered them to take his body from the tree and throw it down at the entrance of the city gate." And on and on. Joshua 10:28 recounts the fall of Makkedah (Joshua 10:28): "That day Joshua took Makkedah. He put the city and its king to the sword and totally destroyed everyone in it. He left no survivors. And he did to the king of Makkedah as he had done to the king of Jericho." And the fall of Debir (Joshua 10:38): "Then Joshua and all Israel with him turned round and attacked Debir. They took the city, its king, and its villages, and put them to the sword. Everyone in it they totally destroyed. They left no survivors. They did to Debir and its king as they had done to Libnah and its king and to Hebron."

Judaism is big on ethnic cleansing. So is any other culture that intends to be around for a long time. Judaism has also been subjected to ethnic cleansing. Is this a case of "as ye sow, so shall ye reap"? Not at all. In the long run, there are

two choices – you may be the ethnic cleanser, or you may be the ethnic cleansee.

"They devoted the city to the Lord." That is an interesting phrase. It means "totally destroyed." The Hebrew term refers to the irrevocable giving over of things or persons to the Lord, often by totally destroying them. You may devote to the Lord, or you may be devoted to the Lord.

<u>The State of War and Peace Atlas</u> by Dan Smith paints a lurid picture of the turmoil on the planet. In 1995, 55 wars raged over the globe. "From 1990 to 1995, 70 states were involved in 93 wars which killed five and a half million people."

In his book, <u>The Clash of Civilizations and the Remaking of World Order</u>, Samuel P. Huntington discusses the fact that global politics is being reconfigured along cultural lines – that peoples and countries with similar cultures are coming together, and those with different cultures are coming apart. The US – established as a Christian nation – now contains from 3.5 to six million Moslems. The number of declared Moslems on active duty in the US military is 4,000, but the total number may be as high as 10,000 (St. Petersburg Times, 22 December 1998). Huntington is on the mark in his assertions about cultural adhesion. His view that global war can be avoided if world leaders cooperate to maintain the multicivilizational character of global politics is wishful thinking. A paradigm shift is coming, but it will not be so much a shift as a total disconnect.

There are a lot of books on predicting the future, such as John Naisbitt's books (e.g., <u>Megatrends</u>) and Alvin Toffler's books (e.g., <u>Future Shock</u>). See Nicholas Rescher's book, <u>Predicting the Future: An Introduction to the Theory of Forecasting</u>, for a nontechnical description various (nontechnical) methodologies. Most of the methods used to predict the future assume that the future will proceed from the past in a rather orderly fashion. Except for Biblical prophecy, they usually assume that a global nuclear war does not occur. Those predictions are irrelevant for a planet whose human population is exploding.

When cheap energy is gone, America will quickly disintegrate. Its population is now too large to subsist on low-energy agriculture. The country will fractionalize as quickly as Yugoslavia did after the collapse of the Soviet Empire. In 1981, Joel Garreau wrote a book entitled, <u>The Nine Nations of North America</u>. Seventeen years later, that book is not far off the mark in identifying the likely states of North America when cheap energy is gone. Those nations are: Hispanic Florida and the Caribbean; the Hispanic southwest and Mexico; French Quebec; the Pacific maritime; New England; the industrial east; the south; the plains; and the nonmaritime west (the Rocky Mountains, midwestern and western Canada, and Alaska). Many Americans are unaware of the fact that most of the rest of the world lives in dire poverty, and many do not appreciate their plight because they have never visited a poor country and seen grinding poverty face to face. Most Americans take their high standard of living for granted. The generation of people who were trying to support a family in the Great Depression is passing away. There are dozens of wars raging on the planet, in which hundreds of thousands of people are killed every year. Americans, however, are not worried about that. They are too busy living the American dream, and they think that it will go on forever. They are worried about their next raise or promotion or job, the stock market, Social Security, the Medicare program, the race problem, the tax system, and the welfare system. The people and the Congress go on and on about how to fix the system. But soon, there is not going to be a system to fix. Americans are living in a transient world that cannot last because it is in conflict with nature. There is not going to be a stock market, or a Social Security system, or a job to worry about.

Nero is fiddling while Rome burns. The planet is in danger of destruction, and Americans are spending their time discussing the Monday-night football game. They are more concerned with making sure that every ad on television and every movie has a politically correct representation of blacks, Asians, and Hispanics, than saving tigers or rhinos or panthers or even the next generation of human beings from extinction.

When cheap energy is gone, it will be black against white; Christian against Jew against Moslem; Protestant against Catholic; Hispanic against French against English; Caucasian against Asian. Democracy cannot thrive in an energy-poor country with insufficient land for everyone. Democracy is at best a transient form of government that arises when resources are abundant. The population of North America is now too great to support with preindustrial agriculture. When abundant land and cheap energy are gone, the issues will be who will be master, who will be slave, and who will be dead.

In fact, slavery may not even be an option. As Stephen Ambrose observed in <u>Undaunted Courage</u>, German immigrants in North America in the eighteenth century worked their own land – no overseers, indentured servants, or slaves. They had little land, and it was purchased by themselves. The English, however, had access to large land holdings because of generous grants from the English king. Comparing the slave-based practices of Virginia farming to those of Europe, Thomas Jefferson observed, "It results from our having such quantities of land to waste as we please. In Europe the object is to make the most of their land, labour being abundant: here it is to make the most of our labour, land being abundant."

If slavery is an option, the issue is, of course, who will be the master and who will be the slave. Malcolm X and Stokely Carmichael observed there is no way that blacks and whites can live together in harmony. Since blacks are far outnumbered by whites in North America, the odds of their being the masters and whites being the slaves are slim. Africa, not North America, is where blacks may be in charge of their own destinies, since that is where blacks are in the vast majority.

Malcolm X attributed the problem between blacks and whites to the fact that the white race is inherently evil. The source of racial strife, racism, and slavery is not genetic: all races have practiced slavery. The source of racial strife, and the source of religious, linguistic, and ethnic strife, is economics. In a low-energy, land-poor setting, the dominant group in any area will be homogeneous, from racial, linguistic, religious, and cultural perspectives.

# XVIII. Who Will Rule?

A low-intensity nuclear war as described earlier can be accomplished by virtually any motivated group. Unlike conventional or ballistic-missile warfare, which require expensive planes or missiles and guidance systems, the cost of the "delivery system" for 1,000 suitcase bombs is very low. All it takes is 1,000 dedicated individuals and some careful planning and coordination. Because of the low cost, the "group" need not be a country. In fact, a non-country group may have a distinct advantage over traditional geographically defined countries, since it is more difficult to target.

With respect to timing of the war, for the survival of the planet and mankind, sooner is better, since the damage being caused by human activity is continuing at a very high rate. Human population and industrial activity are both increasing at horrific rates – human population at 1.4% per year (80 million per year) and industrial activity at a comparable rate. The stress on the planetary ecological system from the relentless destruction of natural forests (and the collateral extinction of species habitat and species) and increasing pollution of the atmosphere (carbon dioxide and other greenhouse gasses) grows more severe with each passing day, month and year.

A major rationale for delaying the war could be that the group planning the attack may require a certain amount of time to assemble the fissionable material required for the bombs. Also, it may be decided that an attack size somewhat larger than the one discussed here (1,000 weapons) would be preferable, and that more time is needed for development of the nuclear inventory or for the postattack "clean-up" or "maintenance" force. For a small group, considerations such as these could be reasons for delay, despite the growing threat to the planet from increasing population and industrial activity.

As discussed earlier, a minimal-regret war has two distinct phases – the first phase consisting of a nuclear attack on cities, and a second, long-term phase aimed at destruction of the residual industrial capacity. Because of the extreme vulnerability of the world's cities, it is a relatively easy matter for a group to accomplish the first phase. Once the majority of the urban population has been destroyed, however, it is "a whole new ball game," with respect to who will prevail. Also as discussed earlier, if more than one nation prevails after the nuclear phase, human population and industrial activity will simply continue to grow, with no long-term change whatever from the current situation.

After the nuclear phase, there will be many groups who will compete for primacy. These include not only the remnants of today's nations, but also the many "survivalist" and paramilitary groups. After the war, each of them, and new groups as well, will have a good shot at taking over, or at least of establishing territorial fiefdoms. Most paramilitary militia or suvivalist groups in the US are not well organized, however, so most of them will not survive.

With respect to increasing the odds of winning, there is a strong advantage to striking first. The group that selects the particular targets (cities, industrial facilities, energy facilities) can assure that its forces are positioned advantageously for survival after the nuclear attack. In an attack of 1,000 weapons, there are many potential targets whose "value" is approximately equal to the value of the last (least-value) city of the target list. The attacker can bring into consideration many other factors in selecting the actual target list, without changing the total payoff value of the attack very much at all.

If, for example, the attacking group is Japanese (or Chinese, or any other nation), then it may wish to spare certain Japanese cities so that a residual Japanese culture remains essentially intact. Or, if the attacking group is of a particular religion (e.g., Christian, Jewish, Islamic or Scientologist), it may wish to spare targets of high cultural value (e.g., Jerusalem or Mecca or Baghdad or Clearwater). Or, the attacking group may wish to apprise itself of nuclearweapon inventories of one of the superpowers, and deliberately avoid destroying certain targets.

Phase 1 of the minimal-regret war – the nuclear attack phase – is the easy part. Winning phase 2 – the "maintenance" phase – is the real challenge. After the nuclear (phase 1) attack, the attacking group could easily be in a much weaker position than many other organizations that remain more or less intact. This weakness can be overcome by careful planning for phase 2, and by designing the phase 1 attack to weaken all potential phase 2 adversaries to the maximum extent possible. This situation is what is referred to in game theory as a "multiplayer" or "n-person" sequential-move game. While the development of strategy to maximize the likelihood of winning phase 2 is of crucial importance, this is a level of attack planning that is beyond the intended scope of this book, and it will not be addressed here.

Whoever succeeds in phase 2 will have to possess a good grasp of the general principles of power and war (Sun Tzu, von Clausewitz, Machiavelli). More importantly, the group must possess a high degree of motivation, dedication, capability, confidence and fervor.

So who will prevail in phase 2? Who will rule? This chapter identifies a number of cultural groups and discusses their relative strengths and weaknesses relative to this issue. The discussion here is intended to be illustrative, not detailed or comprehensive. It will illustrate some of the important factors involved through discussion of a number of national, religious, and ethnic groups.

As discussed earlier, the group that prevails will be homogeneous with respect to race, religion, language, and culture – the requirements for any strong nation. At

first look, it would appear that a small, linguistically distinct group would have the best chance for success. After phase 1, there will still be many millions of survivors from the large countries. The odds of a small group from such a country prevailing either in phase 1 or in phase 2 seem low. The members of any small group from a large group will have many friends and relatives throughout the country. It is reasonable to imagine that a small group of ethnically distinct people with few outside relations could commit itself to waging a minimal-regret war against all the rest of humanity. More importantly, as the size of the group grows, the odds of maintaining security drops dramatically. In the US, millions of people now possess defense security clearances. Furthermore, those millions include members from all races, religions, and ethnic groups. Millions of people cannot keep a secret. When push comes to shove, individuals will protect their family and clan, not a multicultural hodge-podge that no longer possesses a cultural identity at all.

The security of phase 2 operations will be dramatically enhanced if the prevailing group is of a race, language, religion, and culture that is different from all others. If this condition holds, the threat of infiltration from outside the group is dramatically reduced. Infiltrators would be immediately recognized by their racial and linguistic features, just as the World War II shibboleth, "lollapalooza" exposed Japanese infiltrators to American GIs.

A key issue that must be addressed relative to phase 2 is the issue of how large a force is required to have a high likelihood of victory over the residual populations of the entire rest of the world. That issue is not addressed here, although it is a crucial feature of strategy.

This chapter closes with a brief look at some major racial/cultural/religious groups, to assess the likelihood of their success. The following paragraphs summarize group characteristics, and some may attempt to dismiss these observations as "racial" or "cultural" stereotypes. They are indeed racial and cultural stereotypes. It is group characteristics that are of concern here, not the attributes of particular individuals. The selection of groups examined here is not intended at all to be comprehensive, but merely representative, and serving to exemplify the attributes that may be important in determining who is likely to be in charge after a minimal-regret war.

This chapter examines factors that affect the ability of various cultural groups (nations, racial groups, religious groups) to initiate a minimal-attack war and assume control of the postattack world. The observations noted here are both objective and subjective, but they are not religious. God may have other plans – He will choose whom He will choose, and He will give authority to rule – and this chapter does not intend to "second guess" Him. But God may not care if there is a global nuclear war, and God may not care who is given authority to rule. The choice may be up to you!

So who will rule? Perhaps a more appropriate question is "What (ideas) will rule?" As Keynes noted, we are ruled by our ideas and little else.

### The Japanese

The Japanese possess several characteristics that are favorable for success in a minimal-regret war. They are racially, linguistically, religiously, and culturally homogeneous. They have a warrior culture and tradition of conquest. Anyone who has seen Akira Kurosawa's movie "Ran" cannot but be impressed by the Japanese penchant for vengeance and ability to carry a grudge. Having been nuked in World War II, they would take no small satisfaction in returning the favor.

The Japanese are formidable adversaries. They consider all other racial and ethnic groups as inferior. In their warrior tradition, surrender is tantamount to disgrace. That is one reason why they treated allied prisoners with such contempt in the Second World War. They considered surrender as a despicable, contemptuous act. A soldier should fight to the death, not surrender to the enemy. The Samurai tradition, the dedication of the Kamikaze pilots, and the commitment of cults such as Aum Shinrikyo, which gassed the Tokyo subway in 1995 give testimony to the strength, longevity, and intensity of Japanese culture.

My family had personal experiences with the Japanese in World War II. My uncles Frank and Bob served with the Canadian Army fighting the Japanese in Hong Kong. After three weeks of bloody fighting, the Allied forces in Hong Kong surrendered control of the Island to the Japanese, and my uncles, along with all the other Allied forces there, were taken prisoner. They served for four years as prisoners of war in Hong Kong and Japan. Their experiences, and those of the other Canadians and Americans who fought the Japanese, were incredible. For many years, the story of their heroism and courage was not known. Recently, a number of books and television features have been produced about their experiences.

Appendix K provides a brief summary of the experiences of my uncles in the battle for Hong Kong. Their experiences provide useful insight into the Japanese capability to wage war. The Japanese have a proud, martial history. They are not afraid to incur casualties. They are a homogenous, unified people, and a powerful adversary.

As noted in Appendix K, one of the reasons the Japanese treated allied prisoners with contempt is because they surrendered rather than fighting to the death. That is a significant difference between Japanese and Western culture. Under Western culture, it is quite acceptable to surrender when the battle is clearly lost. Under Japanese tradition it is not. The Japanese treatment of civilians and prisoners of war at Hong Kong was not an isolated incident. In the book, <u>The Rape of Nanking</u>, Iris Chang describes the treatment of the Chinese at the hands of the Japanese military in the capture of Nanking (Nanjing, Nanjiang), China, in 1937. In the invasion of Nanking, the original orders (of General Matusi) were to treat the prisoners with respect. The Japanese knew that the eyes of the world were upon them, and they were not oblivious to the value of public relations. There was a last minute switch in the leadership, however, and Emperor Hirohito dispatched his uncle, Prince Asaka Yasuhko, to take charge of the assault on Nanking. Under Asaka, procedures were changed. A total of 300,000 Chinese soldiers surrendered to the Japanese. When Nanking fell, it is estimated that the city contained more than half a million civilians and ninety thousand soldiers. (The Japanese force numbered only 50,000 soldiers.) The prisoners could not be fed, and so orders were issued to kill all captives. It is estimated that about 350,000 people were killed. The Chinese soldiers were taken out in small groups and executed.

The killing in Nanking is one of the largest wholesale murders ever carried out. It exceeds the destruction of Carthage by the Romans (150,000) and the slaughter by the Christian armies during the Spanish Inquisition, and far outnumbers the population killed in Hiroshima (140,000) and Nagasaki (70,000) and the American air raids on Tokyo (100,000).

With respect to the civilian women, the Japanese soldiers were instructed either to pay the women for their sexual services, or to kill them. So the Japanese soldiers simply killed them. The Japs got a lot of bad press from this from Western nations, so they subsequently started the "comfort women" system of military brothels. Up to 200,000 Korean, Chinese, Taiwan, Filipina, and Indonesian women were recruited (induced, purchased, or kidnapped) to provide sexual services to Japanese soldiers, with the goal of reducing rape and its associated international criticism (and reducing venereal disease as well).

In Hong Kong they tried something different. All Chinese women were simply declared prostitutes. While this avoided the killing of the women, the Japanese were still criticized. While the Japanese may have a hard time "getting it right," they are certainly flexible!

The Japanese resisted Western technology for generations, and abandoned the sword for more modern instruments of war with considerable reluctance. Because their culture is so strong, it is somewhat rigid and inflexible. While they may resist change and it may take them some time to accept change, their experimentation with several different modalities of providing sexual services to their soldiers illustrates that they can be flexible, if motivated.

The point to the above discussion is that the Japanese have a strong military tradition, and they are formidable opponents. They do not mind killing the enemy. They are racially, linguistically, religiously, and culturally homogeneous.

They have national/racial/ethnic pride, a strong will, and demonstrated capability. They are strong candidates for victory in a minimal-regret war.

# The Teutonics

By the term "Teutonic," I refer to peoples of Germanic / Anglo-Saxon heritage – northern Europeans, generally. The US and Canada are included under this rubric.

The Germans are rated high as candidates for victory in a minimal-regret war. They have a strong military tradition, and a strong cultural identity. Unlike the US, Canada, and other English-culture nations, to be a German citizen requires proof of German lineage – blood ties. The Germans demonstrated their abilities for organization, drive, and commitment in both World Wars. Like the Japanese, but not to the same degree, the Germans are relatively homogeneous from the viewpoint of race, language, religion, and culture.

Historically, the British have demonstrated remarkable skills in military and social organization. The British Empire was one of the largest and long-lasting empires of all time. In the past century, however, the British peoples worldwide have lost their will to rule. In England, the US, and Canada, what were once strong British cultures have been diluted and destroyed by immigration. The countries and culture that our British forefathers fought and died for has been simply given away by recent generations. We have cheapened the sacrifice of the brave men who fought and died and killed to defend British interests. Our forefathers jeopardized their mortal souls in acquiring and protecting British culture. Wolfe defeated Montcalm to secure North America for the British. Present-day Canadians cannot give their country away fast enough. First to the French, and now to anyone.

I recently consulted to a large Canadian bank. Going to my office in the elevator of the headquarters building, it was not uncommon for me to be the only non-Asian in the elevator. When I was a boy, Canada was a British culture, with a French enclave. It is no longer a British culture. It is now a multicultural mush, with nothing to hold it together. It has been destroyed by multiculturalism, and will disintegrate quickly.

The US was founded by British revolutionaries, who were quite willing to kill all of the North American Indians who previously occupied the land. It is not generally known that the practice of scalping was introduced by the British in the French and Indian Wars. They paid the Indians a bounty for each Frenchman killed, and introduced scalping as a means of verifying kills. After decimating the Indian nations in battle, the US government sent smallpox-infected blankets to the survivors, in hopes of finishing them off. In the US, as in many other countries (Costa Rica, Argentina), there is little problem with indigenous peoples because our forefathers simply wiped them out. They were willing to kill to achieve their objectives, and they founded strong, viable nations.

My grandfather was a company officer in the Canadian Army. He fought in both world wars. My father once told me that Granddad once remarked that he "was born to kill Germans." Dad observed that Granddad was a born soldier, that he was only really happy when he was fighting in the war. While Granddad did his duty, he was quite aware of the context of war. As a boy, I remember his telling me that he realized that the Germans he was fighting were good, brave men – sons, fathers, brothers – doing their duty just as he was.

The point is that it is sometimes necessary to kill people – good, hardworking, religious, brave people – for no reason other than "they are on the other side." The enemy is not an "evil empire." It is men and women competing to survive on a small planet. But if a man is going to put his life on the line, it certainly helps for him to believe in what he is fighting for. The reason for America's discontent in the Vietnam War was that its heart was not in it. US soldiers were not fighting to save their families, or their country, or their way of life. They were fighting for an ill-defined political purpose. America has brainwashed its youth for so long on the sanctity of human life and the equal worth of all cultures and people that it no longer stands for anything. Americans knew what they were fighting for in the Revolutionary War. They knew what they were fighting for in the War Between the States, and in World War I and World War II. But what does America stand for now? As it balkanizes, it is no more a nation than former Yugoslavia or the former Soviet Union.

A Québecois lawyer stated recently that there is no such thing as a "Canadian people" – there is an English-Canadian people and a French-Canadian people. but not a "Canadian people." As immigration floods the United States with people of foreign languages, religions, heritages, and cultures, the same will soon be said of it. There is no "American people." There is an "African-American" people, an "Hispanic-American" people, a "Asian-American" people, and a "Native American" people, but not an American people. When I was a boy, I was taught never to refer to people as hyphenated Americans, i.e., not as "Polish-Americans" or "Italian-Americans," but simply as "Americans." That is no longer the case. Many groups, such as Hispanics and blacks, have formed organizations to promote their distinct cultures. These include, for example, the League of United Latin-American Citizens (LULAC), Mexican-American Legal Defense and Educational Fund (MALDEF), National Council of La Raza, the National Immigration, Refugee and Citizenship Forum, and the National Association for the Advancement of Colored People. They are succeeding well in their quest to balkanize America.

South African whites point out that, unlike the Americans, they did not exterminate the indigenous blacks whose lands they conquered, and the fruit of this action is that they have now lost their country to the blacks. Our forefathers

committed genocide so that we could have a strong nation, but the last two generations have simply given it away. White South Africans owned the country that they forged out of the African wilderness as long as they were willing to kill for it – to enforce apartheid, to keep it "by any means necessary." White Rhodesians owned their country for just as long. The previous generation of white South Africans did what was required to keep their country – just as the country's founders, they were prepared to kill for it. The present generation was not prepared to kill for it. They lost the will to keep their country, and they quickly lost it. Those who accept that this was the proper moral choice must be now content to live in someone else's country. If Moses and Joshua had taken this point of view, the Promised Land would have remained in the hands of the Amorites, the Canaanites, and the Philistines.

Pauline Hanson in Australia is a voice crying in the wilderness. Her party, One Nation, is trying in vain to stop the massive flow of Asian immigrants to Australia under the present government. She will lose, because business interests see more profit in having an Asian Australia than a British one.

General Douglas MacArthur once advised against fighting a land war in Asia. On the ground, it is basically the numbers of troops that determines the outcome. With our government's program of importing thousands of Asians to the US, MacArthur's advice will be as relevant in about 50 years as it was when he gave it, but with one modification: don't fight a land war against Asians. Asians now represent half of the world's population, and the US represents 4.5%. We will lose.

Our forefathers knew what they were doing when they passed the Chinese Exclusion Act and when they interned the Japanese (both in Canada and the US) in World War II. China and Japan and a host of other nations have an American exclusion policy in force today. China moved to subvert our last elections. It is winning the war that Americans do not even realize is going on.

In view of the near-total lack of cultural pride displayed by Britain and British colonies worldwide, it is difficult to see how British culture could be victorious in a minimal-regret war. British culture has lost its vitality, its will to dominate. It is no longer a viable force. Perhaps it is a little too soon to discount the British. A small island nation, they built the largest empire the world has ever known and ran it for hundreds of years. Since the breakup of their empire, however, they have diluted their culture via immigration from their former colonies. Time will tell.

#### The Chinese

The Chinese possess some attributes that give them advantages as potential victors in a minimal-regret war. They have a penchant for orderliness, and

severely subordinate individual rights to group welfare. They have little concern for the environment, however, which makes it rather unlikely that they would initiate a minimal-regret war or strive for victory in phase 2 if some other entity initiated phase 1. Although they are linked by a common written language, they are fractionated linguistically and culturally. They are such a large population that it would be difficult for a small group to operate without infiltration. Although they are a very old culture, they are not a dynamic or inventive one. In the very long course of their history, they stumbled upon the crucial inventions of paper and gunpowder, but lacked the creativity to follow up these inventions with their logical successors (the printing press, guns), despite the passage of many centuries.

The Chinese have expanded their population to the breaking point. Although their culture is very old, it is not wise or caring with respect to the environment. As noted earlier, the Chinese population following a low-intensity war would still be very large (900 million). They are considered likely candidates for winning a global nuclear war, but given their very large population and the current government's objective of providing a high standard of living for all Chinese regardless of consequences to the environment, they are not viewed as likely candidates to effect a minimal-regret population.

### <u>The Russians</u>

The Russians have a strong cultural identity, and are considered strong candidates for victors in a minimal-regret war. A very large proportion speaks Russian. The total population following a low-intensity war would be sufficiently large to conquer the rest of the world. The main shortcoming would appear to be their total lack of concern for the environment.

# The Indians

The term "Indians" here refers to the races of the Indian subcontinent, including Pakistanis and Bangladeshis.

The Indians, like the Chinese, are not considered likely candidates as victors of a minimal-regret war. They have no concern for the environment. Their culture, although very old, has never evolved to a world class technological empire, such as the British, French, or Spanish. Their culture is highly fractionated.

Indians, especially Bengalis, have made impressive contributions to science (e.g., mathematical statistics). They do not mind killing en masse. When the East Pakistanis (now Bangladeshis) rebelled against West Pakistan in 1971, the Pakistanis blamed the insurrection on Hindus and intellectuals. The Pakistanis showed no compunction in mass slaughter of the Hindu minority. Suspects were forced to raise their lungis (garments); if not circumcised (as is the Moslem tradition), they were slaughtered. An estimated one million Hindus were killed in this action. An estimated 200,000-400,000 women were raped in the nine months following the failed rebellion (see Iris Chang, <u>The Rape of Nanking</u>).

Indians take quite naturally to subjugation of others, as evidenced by the caste system. Anyone who as known an Indian family with servants or a business has no doubt observed the ease with which they handle the master/servant relationship.

Indians served with distinction in the British armed forces, but they show little evidence of the drive or organizational skills to dominate the planet. By their prolific birth rate, they have spread over the globe, literally swamping other cultures (e.g., Fiji) with their numbers. As the Chinese, the Indians are definitely part of the population problem, but they are not considered likely candidates for the solution.

### The Negroes

The Negro races have not commanded world leadership in the modern world. That is not to say that their culture, which has lasted millions of years, will not outlast Western culture, because it is pretty clear that Western (industrialized) culture is not sustainable. Africa remains a sleeping giant, despite decades of exposure to Western technology. With decades of integration into American society, however, it is reasonable to pose the question as to whether the American Negro could assume the role of victor in a minimal-regret war.

This does not appear likely. The American Negro (and this refers to the collective culture, not to any particular individual) has a slave mentality. Their charismatic leader Malcolm X summed up the situation succinctly. (Although it is presently in disuse in the US, I will use the more specific term "Negro" here instead of "black" for two reasons. First, it is the term used by Malcolm X. Second, "Negro" is more specific than "black" as a racial descriptor. Many Negroes are brown, not black. Many Asian Indians are black, but they are not Negroes.)

"No Negro leaders have fought for civil rights. They have begged for civil rights. They have begged the white man for civil rights. They have begged the white man for freedom. And any time you beg another man to set you free, you will never be free. Freedom is something that you have to do for yourselves. And until the American Negro lets the white man know that we are really really ready and willing to pay the price that is necessary for freedom, our people will always be walking around here second-class citizens, or what you call twentieth-century slaves. "It's not so good to refer to what you are going to do as a sit-in. That right there castrates you. Right there it brings you down. What goes with it? Think of the image of someone sitting. An old woman can sit. An old man can sit. A chump can sit. A coward can sit. Anything can sit. Well, you and I have been sitting long enough, and it's time today for us to start doing some standing, and some fighting to back that up.

"This is part of what's wrong with you. You do too much singing. Today it's time to stop singing and start swinging. There'll be a hot time in the old town, with regret, with great regret.... It looks like it might be the year of the ballot or the bullet.

"Because Negroes have listened to the trickery and the lies and the false promises of the white man now for too long, and they are fed up. They have become disenchanted, they have become disillusioned, they have become dissatisfied. And all of this has built up frustrations in the black community that makes the black community throughout America today more explosive than all of the atomic bombs the Russians can ever invent. Whenever you've got a racial powderkeg sitting in your lap you're in more trouble than if you had an atomic powderkeg sitting in your lap. When a racial powderkeg goes off it doesn't care who it knocks out of the way. Understand this, it's dangerous.

"I am and always will be a Muslim. My religion is Islam. I still believe that Mr. Muhammad's analysis of the problem is the most realistic, and that his solution is the best one. This means that I too believe that the best solution is complete separation, with our people going back home, that is, to our African homeland.

"We declare our right on this Earth to be a man, to be a human being, to be respected as a human being, to be given the rights of a human being, in this society, on this Earth, in this day, which we intend to bring into existence by any means necessary."

Malcolm X realized that you can never be truly free unless you earn your freedom on the field of battle. If someone "gives" you your freedom, he can just as well take it away, and you are not free at all. But other US Negroes did not want to hear this, and so they killed Malcolm X. He was the most charismatic, powerful, on-the-mark Negro leader ever to emerge in the US, and he was gunned down by his own people.

The American Negro is haunted by the knowledge that his ancestors chose slavery over death. That stark fact distinguishes him from white Americans as strongly as his color. White Americans can hark back to Patrick Henry's famous speech, "Is life so dear, or peace so sweet, as to be purchased at the price of chains and slavery? Forbid it, Almighty God! I know not what course others may take, but as for me, give me liberty or give me death!" The American Negro will never erase the shame of slavery until he wins his freedom, as a people, on the battlefield. Then and only then will he, too, be able to say that he chose between freedom and death.

Malcolm X recognized that part of the problem of the blacks faced owed to their lack of cultural identity. He claimed that the white man had obliterated black history and culture to the extent that they no longer know who they were, and have no confidence in their abilities. And this is a significant point. While the blacks may be bound by a common race, they are incredibly fractionated linguistically, culturally, and religiously. In historic times, they have never formed a global empire or even a single country of global significance.

Stokely Carmichael also realized the impossibility of blacks living together in harmony with whites. He was committed to separation of the races. He rejected the United States and moved to Guinea. He urged other black Americans to undertake mass emigration to Africa. "Africa would not need to depend on foreign technicians to service and maintain sophisticated imported equipment...The land in Africa, not America, is ours. Our primary objective should be Africa."

The problem that Malcolm X never addressed was that, with the world filled with people, there was no longer anywhere to go. The last free land disappeared in the late 1800s, when they closed the Land Office. If the American Negro wants freedom, he will have to claim a land, take it from someone else, and successfully defend it, as has always been the way of the world. The odds of his doing so in North America today are nil. Blacks are a small minority in the US, and the US is not going to allow part of it to break off as a black homeland. Armed with decades of American culture and technology, however, it is guite possible that the American Negro could conquer Africa, or at least a significant part of it. That is the only way he is going to have a chance of being in charge of his destiny. The black man may be in charge of his destiny in Africa, but not in America. The American Negro is better trained and better organized than ever before. The white man has released his political grip on Africa. Much of Africa is disorganized, unorganized, or chaotic. It is ripe for the taking. If the American Negro wishes to be truly free, his best chance would appear to be to conquer Africa.

In his book, <u>Out of America</u>, Keith B. Richburg writes that black Americans feel like strangers in America. He writes that in America he may feel like an alien, but in Africa, he **is** an alien. He is indeed a man without a country. But until the day that he or his progeny fights and kills for land and lay claim to it as their own, they will never be truly free and they will never have a home to call their own. That is the only way that the shame of slavery may be erased.

Mohandes K. Ghandi was never able to make a mark in his home in South Africa, but he achieved great things in India, the land of his race. In the world of today, you have a white lady leading Guyana and a Japanese man leading Peru, with the voluntary will of the people. These cases are pathological, and do not occur in low-energy contexts.

Thomas Jefferson knew what he was talking about when he observed, "The tree of liberty must be refreshed from time to time with the blood of patriots and tyrants" (November 13, 1787). Those who fight and die and kill for land and liberty secure the fruits of their sacrifice only for themselves and their small children. Each generation must renew the sacrifice. The American Negro will be free when his people claims a homeland and waters its tree of liberty with the blood of its patriots. Shaka understood this, and the Zulus were a proud, free people.

In <u>A History of Warfare</u>, John Keegan gives a succinct description of the rise of Shaka, the powerful Zulu chief. Shaka totally revised his tribe, formerly a gentle, pastoral people, into a powerful killing machine that terrorized all of southern Africa. His reign shows how fast an effective military society can develop, and how formidable a black fighting force can be.

The American Negro has served with distinction in battle throughout the history of America, earning even the respect of the formidable adversary, the North American Indian, who bestowed upon him the name, the Buffalo Soldier. But serving in someone else's army and fighting someone else's war does not establish your claim to anything. The American Negro leadership has included powerful, courageous men such as Malcolm X. We are not talking here about individuals, however, but of group or cultural characteristics. So, will blacks be the victors in a minimal-regret war? If God wills it, certainly: they may well be the "sleeper." Otherwise, not very likely.

#### **Relgious Groups**

The groups to be considered next are religious groups. Before discussing them, a table will be presented that shows the relative sizes of the various major world religions. The following is a table showing the religious populations of the world in 1996. It is taken from a larger table that shows religious population by region, in <u>Statistical Abstract of the United States 1997</u>, Table 1333.

Religion	Total (thousands)	Percentage
Total population	5,804,120	100.0
Christians	1,955,229	33.7
Roman Catholics	981,465	16.9
Protestants	404,020	7.0
Orthodox	218,350	3.8
Anglicans	69,136	1.2
Other Christians	282,258	4.9

Muslims	1,126,325	19.4
Nonreligious	886,929	15.3
Hindus	793,076	13.7
Buddhists	325,275	5.6
Atheists	222,195	3.8
Chinese folk-religionists	220,921	3.8
New-religionists	106,016	1.8
Ethnic religionists	102,945	1.8
Sikhs	19,508	0.3
Jews	13,866	0.2
Spiritists	10,293	0.2
Baha'is	6,404	0.1
Confucians	5,086	0.1
Jains	4,920	0.1
Shintoists	2,898	
Other religionists	1,952	
Parsees	191	
Mandeans	45	

#### The Arabs; Islam

"The Arabs" is an inclusive term, recent in origin, that refers to the diverse collection of peoples who speak languages of the Arabic family (see <u>Seven</u> <u>Pillars of Wisdom</u> by T. E. Lawrence, and <u>A Peace to End All Peace</u> by David Fromkin). As observed by David Lamb (<u>The Arabs: Journeys beyond the Mirage</u>), the Arab world is a religious empire that is relatively cohesive linguistically, culturally and religiously, but politically and socially fractured and diverse.

Many Arabs are comfortable with the concept of state-sponsored terrorism (as are many nonArab states, to be sure). The concept of "jihad" (literally, "striving," or "striving for Allah's cause," not necessarily by fighting or "holy war") is an important concept. And, as noted by Geraldine Brooks (<u>Nine Parts of Desire:</u> <u>The Hidden World of Islamic Women</u>), "jihad is for women, too." Arab organizations appear to have little difficulty recruiting suicide bombers; an Arab group would have little difficulty in recruiting members to place 1,000 suitcase bombs in cities around the globe. There are now six million Moslems in the US, with 4-10 thousand in the US military. Planting several hundred suitcase bombs in US cities would present no problems. Culturally, the Arabs would have no problem in waging a minimal-regret war against the rest of the world. The concept of a single world government is quite consistent with Islam.

The Arabs at one time controlled the world's largest empire, ranging from India to the Atlantic. Although disorganized and fractured at the present time, they have

demonstrated the will and capability of conquering the world. They did it once, and they can do it again.

## The Israelis; Judaism

The Israelis have a several-thousand-year history of waging war against the rest of the world. They will do whatever is required to achieve victory. They have a strong cultural identity and sense of destiny. They are a logical candidate for a victor in a minimal-regret war.

A major perceived shortcoming of Israel as a victor in a minimal-regret war is that it is so small. In the combination minimal-regret attack of 1,000 weapons worldwide, two weapons are allocated to Israel: Tel Aviv and Jerusalem. This would destroy 56% of the city population of 3.6 million, or two million people. The total population of Israel is 5.7 million. This would leave 2.1 million – but a fraction of the original population. Of course, if either Israel or the Arabs initiate the war, Jerusalem would not be attacked at all.

In considering Judaism it is important to note that the global population of Jews is about 14 million. Of all of the groups considered here, it is one of the more logical choices for victor in a minimal-regret world-population paradigm. It is global in presence, it is very powerful; it is small – it is in fact a family: the children of Abraham, through Isaac; it is religious – moreover, it is bound together by a single religion; it is nonChristian; it has a strong cultural identity, sense of history and destiny.

# The Freemasons; New Age Groups; Doomsday Cults

In his book, <u>En Route to Global Occupation</u>, Gary H. Kah discusses his views on the movement to world government. It is his opinion that this movement is well under way, and that Freemasonry and so-called New Age groups are playing a significant role in it. He observes that the United Nations is close to being a world government, except that it is powerless. He discusses the relevance of a number of organizations to a "new world order," including the Masons, the United Nations, the Council of Foreign Relations, the Trilateral Commission, the World Constitution and Parliament Association, the Bilderberger Group, the Club of Rome, and others.

Kah observes that people everywhere are so afraid of war that they will agree to anything that would appear to promote world peace. Decades of the cold war and living in fear of nuclear annihilation have set the stage for a world government. He cites the growing interest in pantheism, Eastern religions and philosophies, the occult, and a global economic system as factors involved in the one-world movement. Albert Gallatin Mackey wrote a massive multivolume history of Masonry. Part One was recently reprinted by Barnes and Noble under the title, <u>The History of</u> <u>Freemasonry</u>. This volume describes many of the legends and myths that form the basis for Freemasonry rituals and beliefs. In her book, <u>Not out of Africa</u>, Mary Lefkowitz points out that there were no mystery cults in ancient Egypt, and that much Masonic literature is based on flawed history. Additional material on the role of Masonry through the ages is presented in <u>Bloodline of the Holy Grail</u>, by Laurence Gardner.

Edgar Cayce, in one of his readings, recited the following. "With those changes that will be wrought, Americanism – the ism – with the universal thought that is expressed and manifested in the brotherhood of man into group thought, as expressed by the Masonic Order, will be the eventual rule in the settlement of affairs in the world. Not that the world is to become a Masonic Order, but the principles that are embraced in same will be the basis upon which the new order of peace is to be established in '44 and '45." (See B. Ernest Frejer's <u>The Edgar</u> <u>Cayce Companion</u>.)

I will not provide details on Kah's thesis or the New Age or one-world movements. In Kah's view, nonChristian organizations are playing a significant part in the movement to a New World Order. Any of these could play a role in a minimal-regret war and political system. Since New Age groups are generally multicultural and lack religious fervor, it is easy to discount the likelihood of a major role.

As an aside, it is remarkable to see how the literature on the occult has mushroomed. About 1979, I had occasion to look for a book on Nostradamus' prophecies. I could not find a single English edition in print in the United States. I went to the Library of Congress, and was able to find an old French edition. Today, the bookshelves in bookstores are brimming with Nostradamus, Edgar Cayce, and all sorts of New Age literature.

I was rather surprised to see the attention given to Hugh Everett III. He is the man who invented the concept of "parallel universes," in his 1956 PhD dissertation in physics. "New Agers" have taken this concept – used to explain the behavior of subatomic particles – and run with it. See, for example, Fred Alan Wolf's books, <u>Parallel Universes: The Search for Other Worlds, Taking the Quantum Leap</u>, and <u>The Eagle's Quest</u>. Early in my career, I worked with Hugh Everett for five years at his firm, Lambda Corporation, in the field of game theory and lagrangian optimization. I played poker with him regularly during that time, and enjoyed many a "sherry hour" and square dance as well. He was certainly a brilliant physicist, but in all that time I never had any discussions with him about the occult. From the New Age literature, one quickly concludes that Hugh Everett is much more than a brilliant physicist, but a New Age guru who discovered the essential nature of the universe.

#### The Scientologists

Scientology is a controversial religion ("applied religious philosophy," in the words of its founder) headquartered in Clearwater, Florida. It was founded in 1950 by L. Ron Hubbard, who died in 1986. It is a dynamic, fast-growing, aggressive movement with a global presence and financial wherewithal. Its goal is "A civilization without insanity, without criminals and without war, where the able can prosper and honest beings can have rights, and where man is free to rise to greater heights."

Scientology uses a "spiritual healing technology" called Dianetics to improve the working of the human mind. It involves a process called "auditing," which is conducted using a polygraph-like machine called an engram-meter, or "e-meter." Engrams are unpleasant or painful memories, that are neutralized to enable an individual to achieve a highly rational mental state called "clear."

Scientology is centered around eight "dynamics" (drives, impulses, urges) of human existence: self, sex, group, mankind, life, the physical universe, thought, and universal thought.

In the views of Scientology's adherents, Hubbard created and made known the knowledge and the technology necessary to change the face of civilization on Earth. It is nonpolitical and includes individuals of any race or nation.

A religion such as Scientology has many of the attributes needed to succeed as victor in a minimal-regret war: vision, sense of identity and purpose, will, determination, vitality, capability, a global presence. It is committed to a civilization without war; that can only happen in a world consisting of a single nation. It is not a Jewish, Christian or Islamic religion, and hence has no restrictions placed on it by the Torah, the Bible, or the Koran. It is not large: estimates range from a few hundred thousand to a few million worldwide. It is multicultural, which aspect would appear to diminish its importance as a victor in a minimal-regret war.

# <u>Afterword</u>

This concludes the brief discussion of various ethnic groups, from the viewpoint of their likelihood as victors in a global war. This discussion is presented as an "aside." This book is not concerned with predicting who will take over the world, or promoting any particular group as victors. It is concerned with observing that a minimal-regret population paradigm dominates all others, since it promotes the survival of mankind while minimizing the likelihood of destroying the biosphere, mankind, and all other species. Which ethnic group prevails in a minimal-regret population is of no concern or importance; what is important is saving the planet.

A seductively attractive aspect of a minimal-regret approach to world population determination is that it may be implemented by a very small industrialized population – on the order of five million people. In today's world, and in the postattack world of the future, there are or will be a large number of ethnically homogeneous groups of five million. As mentioned earlier, many groups will have a shot at being the minimal-regret industrialized population. It is not restricted to the Americas, the Russias, or the Germanys of the world. After a minimal-regret war, the role of world dictator is available to virtually any group, with little regard to the sizes of the world's current nations, religions, races or ethnic groups.

After reading the above, you may be prompted to accuse me of racism. Am I a racist? (Does it matter?) That depends on your definition. In the United States, it is now common practice to call anything that is disadvantageous for blacks as "racist," regardless of the motivation. I do not believe that any race is in any important sense inferior to any other race. People of every race are all God's children. He created them similar in some ways and different in others. I despise no one because of racial differences – they are God's creation, and I do not presume to despise His creation. My view (as discussed earlier) is that when times get bad, race (and any other differences) will determine who fights whom. If you choose to survive, you will defend yourself, your family, your religion, your race, your language, your culture, your tribe, your nation. If you do not do this, you will perish.

Similarly, you may be prompted to suggest that I dislike immigrants. The Bible says, "When an alien lives in your land, do not ill-treat him. The alien living with you must be treated as one of your natural-born. Love him as yourself, for you were aliens in Egypt." (Lev. 19:33). I am not against immigrants. I am an immigrant. My parents were immigrants. My sister and brother are immigrants. My grandmother was an immigrant and my great grandfather was an immigrant. If you go back far enough, everyone from every country is an immigrant or descendent of immigrants.

Being an immigrant or descendent of an immigrant is totally irrelevant to the population issue. John F. Kennedy's observation that this is a "nation of immigrants" is absurdly irrelevant, as a basis for deciding population policy. I am against population growth, and hence against allowing immigrants in large numbers – say, any more than a few hundred or thousand a year (whatever is necessary for spying or other national defense purposes). The US is grossly overpopulated. I am therefore against immigration at any level.

I am not against other nations or other peoples. I delight in visiting foreign cultures and lands, and in working in them. I love foreign languages. I speak

French and Spanish, still remember a little German, and know enough Arabic to get around on the streets of Cairo. The Koran says, "O mankind! We created you from a single pair of a male and a female, and made you into nations and tribes that ye may know each other, not that ye may despise each other." (49:13). But do I want bilingual government crammed down my throat. No, I do not. Do I want my government to spend my taxes on bilingual education, bilingual services, and bilingual ballots, to disunite the country by creating foreignlanguage and foreign-culture enclaves and unassimilated, warring factions and self-interest groups? No, I do not. My ancestors fought and died and killed to establish a unified nation with a principal language, religion, race, and culture. Do I wish to see all of those destroyed? No, I do not. (For more discussion of the disintegration of America by multiculturalism, see Arthur M. Schlesinger, Jr.'s book, The Disuniting of America, Georgie Anne Gever's Americans No More, or Brent A. Nelson's America Balkanized. See Rosalie Pedalino Porter's Forked Tongue: The Politics of Bilingual Education for information about the US bilingual education program.)

My forefathers were white, European Christians. They fought and died and killed to carve this land (both Canada and the United States) out of the wilderness. They jeopardized their mortal souls by killing Indians and Spanish and French (and even the British) to take their land and bequeath it to their offspring. They killed and were killed by the Japanese to maintain our way of life. Do I wish to cheapen their sacrifice by giving away the land that they fought, killed, and died for? No, I do not.

Immigration has virtually doubled the population of the US and Canada in my lifetime. One hundred million immigrants have diluted my culture, crowded my national parks, purchased and occupied natural habitat and prime real estate, increased commuting times to unbearable levels, and caused the paving of millions of acres of my country. They have killed thousands of my countrymen, and are occupying much of my country.

The January 3, 1999 issue of Parade's cover story provides a dramatic illustration of how America has lost control of its borders and is drowning in a sea of immigrants because of the Immigration Act of 1965. The story, "An American Experience," by Ted Szulc, describes how a Mexican illegally entered the US thirty-two years ago. He sneaked across the border in 1966, was captured, and deported. A year later, he paid professional smugglers to take him across the border in the trunk of a car. He was soon working illegally in San Gabriel, California. He was soon joined by his wife, three sons, and a daughter – all illegal aliens. In 1970 he had two more children. Under America's birthright citizenship policy, they were automatically citizens, even though the father was an illegal alien – a criminal, a citizen of a foreign country with no legal right to be here.

Under the ridiculous terms of the Immigration Act of 1965, this criminal now qualified (since his children were US citizens) for a "Green Card," enabling him to work in the US. He and his wife are now US citizens. They have had 14 children in all! Those children have children – one of them has six! The article did not tell how many children in all, but at an average of three apiece, that could be 14x3=42 children. And grandchildren! So one illegal alien arriving in 1966 has now spawned perhaps forty or more US citizens! In order to provide the infrastructure to accommodate 40 more citizens, the country has, on average, to destroy about 40 acres of land (for homes, schools, hospitals, roads, and the like). At the US average energy consumption level of 8,000 kilograms of oil equivalent per person, those forty people consume about 320,000 kilograms of oil equivalent per year. Over the past decade, that is 3.2 million kilograms of oil equivalent. One of the children is a physician, and is no doubt responsible for even more consumption than an average person.

The incredible thing is that the cover story was written in glowing terms, as an American success story. A single criminal has now created 40 additional US citizens who are consuming an additional 3.2 million kilograms of oil a decade. If he and his offspring had stayed in Mexico, things would have been quite better for the planet. First, at least one of his children would have died in infancy, because Mexico has a rather high infant mortality rate (72 deaths per 1,000 live births in 1970, compared to 20 per 1,000 in the US). Second, the destruction to the environment would have been much less. Mexico would not have paved over 40 acres of productive land to make room for the offspring. Third the energy consumption would have been far less. Mexico's annual per capita commercial energy consumption is 1,456 kilograms of oil equivalent per capita per annum, compared to almost 8,000 in the US – about one-fifth. Instead of burning 3.2 million kilograms of oil per decade the family would have burned just about half a million kilograms of oil. In fact, if they had lived in Jalisco (a rural state), where the illegal alien was from, they would have probably burned even less.

Finally, economic studies have shown that Mexicans who migrate to California often have even **more** children than they do in Mexico. (See the article, "Population: The Awkward Truth, by Eugene Linden in <u>The Economist</u>, June 20, 1994: "Peasant families tend to have two to three children in Mexico City, while those who immigrate to the US average four or five children. In crowded Mexico City each child imposes steep costs on a family, while in the US welfare payments and other social safety nets buffer those costs. These skewed incentives convey similar signals to poor young women in America's inner cities, who in many cases see no reason to defer having children.") If the illegal alien had half as many children in Mexico, he and his offspring would have been responsible for the burning of just a quarter million kilograms of oil per decade. That is about a tenth of the amount of oil that they burned, living high on the hog in the USA.

No only did America shoot itself in the foot by letting this illegal alien continue to live in the US, but it imposed a high cost to the planet. The 3.2 million kilograms of oil equivalent that the alien and his family burn every decade that they remain here have added to land pollution, water pollution, local air pollution, and atmospheric pollution (greenhouse gases, ozone layer destruction). And it's not just this single illegal alien – it is millions just like him. America has added about 100 million people to its population since 1950 because of immigration. Those people are responsible for burning about 800 billion kilograms of oil equivalent per year. Had they stayed in their own countries (which consume far less energy), about four-fifths of this, or about 640 billion kilograms of oil equivalent would be saved, every year.

America has lost its bearings. It is giving away this grand country as fast as it can. Moreover, as its energy-addicted population soars, it is polluting itself and the planet out of existence!

Almost every nation in the world fights to defend its borders and protect itself from ethnic dilution. This includes the Japanese, the Chinese, the Indians, the Koreans, and almost all the others. It does not include the US, Canada, and Australia, which are committing cultural suicide as fast as they can. Present-day Americans have been brainwashed to believe that wanting to preserve a white, English-speaking, European, Christian country is morally wrong. Although that right is granted to and exercised by every other nation on Earth, it is derided as "racist" in the US and Canada and Australia.

So am I a racist? No way I am! You bet I am! The answer depends totally on the definition of "racist." I do not despise other races – on the contrary, I love other races -- but I have the human desire to preserve my family, my tribe, my race, my culture. There is nothing wrong or sinful or unnatural in this. God established tribes and nations. To fight for your family, your tribe, your nation, your religion is not wrong – it is your responsibility as a human being. Note well, however, that the decision for one race (or culture defined by any other attribute) to take up arms against another is sanctified only in the context of nation against nation, not individual man against individual man. Jesus said, "Render unto Caesar what is Caesar's, and unto the Lord what is the Lord's" (Matt. 22:22). To fight for your culture is demanded by Judaism, Islam, and, by Jesus' mandate, Christianity (provided it is done through an established government).

In times of peace, when there is sufficient land for everyone, racism is not a major factor. When land is in short supply, however, war invariably breaks out and ethnic differences such as racism, religion, language, and culture become the basis for deciding what side you are on, and whether you and your loved ones shall live or die. You must put a stake in the ground and take a stand. You must decide to be loyal to your chosen people, or to be a traitor. In hard times, there is no middle ground: you must kill or be killed. The bayonet will be in your son's belly, or in someone else's. It is your wife and daughter who will be raped,

or someone else's. If multiculturalism is the path you choose, you will certainly lose. It will be your son who is killed, your daughter who is raped, and your race that is enslaved. The choice is either master or slave – there is no middle ground. Multiculturalism is a luxury for wealthy countries in times of peace. It will evaporate as quickly as the morning mist, when war breaks out.

God forbade Israel to dilute its national character by practicing multiculturalism. Quite the contrary, He insisted on their maintaining their cultural integrity. "Do not intermarry with them. Do not give your daughters to their sons or take their daughters for your sons, for they will turn your sons away from following me to serve other gods, and the Lord's anger will burn against you and quickly destroy you." (Deut. 7:3).

Racism may be condemned or outlawed on a personal level, just as killing by individuals is condemned and outlawed. But what may be proscribed for individuals has nothing to do with what is required of nations. A nation may define itself by its race, religion, language, and culture, and protect those attributes by whatever means necessary. If Germany or Japan or India or China decides that you must be of German blood, or Japanese blood, or Indian blood, or Chinese blood to be a citizen, that is their perfect, God-given right.

"You must destroy all the peoples that the Lord your God gives over to you. Do not look on them with pity and do not serve their gods, for that will be a snare to you." (Deut. 7:16). "Be men, and fight!" (1 Samuel 4:9). "We struck them down, leaving no survivors." (Deut. 3:3).

On a personal level, I love all God's people. But if another nation sends hundreds, or thousands, or millions of its citizens to invade my country, it is a God-given right and a national responsibility to preserve my own "by any means necessary," including war. The following is a table of illegal aliens, by country of origin (<u>Statistical Abstract of the United States 1997</u>, Table 10; numbers are Immigration and Naturalization Service estimates for October 1996):

Country	Number (thousands)
Mexico	2,700
El Salvador	335
Guatemala	165
Canada	120
Haiti	105
Philippines	95
Honduras	90
Bahamas, The	70
Nicaragua	70
Poland	70
Colombia	65

Ecuador	55
Jamaica	50
Dominican Rep.	50
Trinidad & Tobago	50
Pakistan	41
India	33
Ireland	30
Portugal	27
Italy	25

These people are criminals who have invaded our country. In earlier times, the response to an invasion of five million aliens would have been war. The enemy would be killed, our borders protected. Today, in the US, the response is to try to develop their countries economically so that they will not want to come to the US. This approach has been tried for decades, and it has failed utterly – to the tune of five million illegal aliens today. It is a stupid, risk-seeking approach. If it works, fine. If it doesn't, then our culture is destroyed. And it doesn't work. It is the same stupid approach that is being used to reduce the population explosion: develop countries economically and they will undergo a demographic transition to a stable population. If it works, fine. If it doesn't work.

Mexico, El Salvador, Guatemala, and the other countries listed above do not care that their citizens are swamping the US. Quite the contrary, they receive large remissions from their citizens here, both legal and illegal. There are two ways to stop the flow of illegal aliens – at the source or at the destination. Stopping it at the source, by attempting to develop these poor countries, has proved totally ineffective. Stopping it at the destination is much more feasible.

In the words of Malcolm X, "it is time to stop singing and start swinging," and to repel this invasion "by any means necessary."

#### XIX. Isaac Asimov Saw It All

Back in the 1950s, the science and science-fiction author Isaac Asimov wrote a book entitled, <u>The Thousand Year Plan</u>. This book was later renamed <u>Foundation</u> and, together with two sequels, <u>Foundation and Empire</u> and <u>Second Foundation</u>, formed part of what became known as the Foundation Trilogy. The plot for this popular series was that the galactic empire was in danger of falling apart, and a group of men committed themselves to "saving" it. Without intervention, it was estimated that galactic civilization would disintegrate into a primitive "interregnum" or "dark age" period of 40,000 years. By setting up an organization to preserve galactic technology, however, the period of anarchy could be reduced from 40,000 years to 1,000 years. That, in essence, was the "thousand year plan." The group formed to implement the plan was the "Foundation." The planet on which the Foundation was established was called Terminus. The architect of the thousand year plan was the psychohistorian, Hari Seldon.

Because of human overpopulation and runaway industrial activity, Earth faces a problem analogous to that faced by galactic civilization in <u>The Thousand Year</u> <u>Plan</u>. If an immediate and massive reduction in industrial activity does not occur, the likelihood of a catastrophic breakdown in the planet's biosphere appears to be very great. If this happens, and if the human species continues at all, it could indeed be thousands of years before human civilization arises again.

What has caused mankind to get into such a predicament? The problem would appear to be that mankind does not have the foggiest idea about why it exists and what its purpose is. If the minimal-regret war succeeds, large-scale industrial activity will come to an immediate halt, and the planet's biosphere will be able to continue as it has for millions of years. Without the minimal-regret war, it would appear that mankind will exterminate itself rather soon, and we shall never have the answer to the question, "What Are People For?" With the war, and with a thousand years of meditation, it is perhaps possible that mankind will have some time to reflect and may be able to figure out what it is all about. Was mankind created simply to destroy the planet and itself? Or does it have a higher purpose? All civilizations come to an end as well. Current civilization is madly racing to destroy the planet for no reason at all. A minimal-regret population will give mankind time to figure out what its purpose is, before all of nature is gone.

In his writings, Asimov also addressed the energy problem. In <u>The Gods</u> <u>Themselves</u>, he addressed the problem imposed by the second law of thermodynamics, or the "entropy" problem. The second law of thermodynamics states that the level of disorder (or entropy) of a closed system cannot increase – the universe is gradually running down and will end up in what is called "heat death." In <u>The Gods Themselves</u>, Asimov conjectures a "parallel universe" solution to the entropy problem, by which our universe and a parallel universe trade energy – in effect, our universe ceases to be a closed system.

Asimov was very concerned about the poisoning of the planet by industrial activity. He and Frederik Pohl wrote the book, <u>Our Angry Earth</u>, in an attempt to call attention to the pending disaster. That book was written a year before the Rio de Janeiro Conference on the global environment. As observed by Frederik Pohl in the chapter, "Afterword: One Year Later" (following Asimov's death), nothing changed as a result of that conference. Pohl notes that money and politics are the problem. The march to disaster continues. Perhaps it is time to implement Asimov's thousand year plan.

Considering the future is a popular theme of science fiction writers. In his 1933 book, <u>The Shape of Things to Come</u>, H. G. Wells describes a future wracked by planetary war, the destruction of capitalism, Hobbesian chaos, and the rise of a world government.

In the article, "Population Factors in Development Economics" (in Population and Resources in Western Intellectual Traditions, a supplement to Vol. 14 (1988) of <u>Population and Development Review</u>, Michael S. Teitelbaum and Jay M. Winters, editors) author Kenneth E. Boulding observes, in criticizing Julian Simon and the anti-Malthusians, that "it is sometimes the poets and the science-fiction writers who are the best guides to the future." Time will tell.

# XX. Religious Aspects

This chapter summarizes the attitudes of the world's three largest monotheistic religions toward issues that relate to a minimal-regret population and a minimal-regret war. Appendix L contains a selection of verses from the Jewish, Christian, and Islamic scriptures (i.e., the Bible and the Koran). The verses relate to the various topics covered in this book, including war, politics, morality, slavery, immigration, the environment, and eschatology (the branch of theology concerned with final events in the history of the world or of mankind). Some verses are included simply to provide background on these religions. While the number of verses quoted below may seem large, they are but a small fraction of the total. These verses are included because relatively few Americans have read the Bible, and even fewer the Koran, and may not be aware of its relevance to the problem of determining the world's population. In some cases, the number of verses relating to a particular topic is large, and the topic description is mentioned without quoting the verses.

The presentation here will be mainly objective, not interpretive. The discussion of religion with respect to the themes and theses of this book is not intended to support or justify them in any way. This book is very much about war, however, and war cannot be separated from religion. For this reason, it is important to understand what the position of the major religions is relative to the issues considered by this book.

#### Jewish Scriptures

The major themes of the Hebrew Torah (the Pentateuch, or the five books of Moses, which are the first five books of the Old Testament) are the early history of mankind, including Abraham, the founding of the twelve tribes of Israel, Moses, and the Exodus of the Jews from Egypt. Jewish religious law is described in detail in Leviticus. The Book of Joshua tells the story of the Jewish conquest of Canaan, or the land promised to them by the Lord following their Exodus from Egypt and wandering for forty years in the wilderness.

This story is remarkably bloody and brutal. The Lord told Moses to wipe out all of the inhabitants of the Promised Land. Joshua carried out this mandate with a vengeance. Under Joshua, the Israelites systematically exterminated thirty-one tribes occupying the territory east of the Jordan River. In each case, no one was spared. Every man, woman and child was put to death. Following Joshua, Jewish history continues (recorded in Judges) with bloody massacres of conquest. Given this bloody history of Jewish genocide against others, it is a little surprising how loudly the Jews of the twentieth century have protested a similar action attempted against them in the Second World War. The Jews have been ardent practitioners of genocide. The kettle is indeed calling the pot black!

The message in this history is that the Jews have a strong religious tradition of exterminating other peoples.

## Islamic Scriptures

The Islamic religion has a similar history of religiously-motivated conquest. Mohammed himself led his followers in military campaigns against nonMoslem groups during the period 622-630 AD. Following his death, his followers launched an incredibly successful series of conquests that by the year 711 had established the largest empire the world had ever seen, ranging from India through the Middle East and North Africa to the Atlantic Ocean and Spain.

It is significant to note that according to the Koran (Surah 8:67), ordinary wars of conquest are not allowed. As noted by Abdullah Yusuf Ali (<u>The Meaning of the Holy Qur'an</u>), "An ordinary war may be for territory or trade, revenge or military glory – all 'temporal goods of this world.' Such a war is condemned. But a Jihad (holy war) is fought under strict conditions laid down by Islam, and solely for the cause of Allah. All baser motives, therefore are strictly excluded. The greed of gain in the shape of ransom from captives has no place in such warfare."

#### Christian Scriptures

The relationship of Christianity to war is quite different from that of Judaism and Islam. Christianity has nothing to do with the state; that is the domain of "Caesar." In fact, as noted earlier, no state could function if it adopted Christianity. As noted by D. H. Lawrence (in <u>Apocalypse</u>), "The State *cannot* be Christian. Every State is a Power. It cannot be otherwise. Every State must guard its own boundaries and guard its own prosperity. If it fails to do so, it betrays all its individual citizens." The Christian Crusades were conducted by secular states whose leaders were Christian, not by "Christian" states.

In view of the relationship of Judaism, Islam, and Christianity to war, it is indeed possible for a Jewish state or group or an Islamic state or group to wage a minimal-regret war, and it is possible for any other nonChristian group to wage a minimal-regret war. It is not possible for a Christian group to wage a minimalregret war, or any other type of war. Such a group may certainly include Christians, but it cannot be a Christian group. A Christian must love his enemy and turn the other cheek.

Judaism does not permit Jews to be slaves, and Islam does not permit Moslems to be slaves, but Christianity takes no issue with slavery. Christianity is not concerned with power, or whether a person is a slave or a master or a merchant or a soldier or a first lady or a guttersnipe. It is interested in moral conduct – the Golden Rule – how you treat and respond to others.

Jesus revolutionary ethical principles are summarized in the following verses from Matthew 5:38-44:

"You have heard that it was said, 'Eye for eye, and tooth for tooth.' But I tell you, Do not resist an evil person. Is someone strikes you on the right cheek, turn to him the other also. And if someone wants to sue you and take your tunic, let him have your cloak as well. If someone forces you to go one mile, go with him two miles. Give to the one who asks you, and do not turn away from the one who wants to borrow from you. You have heard that it was said, 'Love your neighbor and hate your enemy.' But I tell you: Love your enemies and pray for those who persecute you."

As Michael H. Hart points out in <u>The 100: A Ranking of the Most Influential</u> <u>Persons in History</u>, Jesus' dictates are not widely followed or even generally accepted. He observes: "Most Christians consider the injunction to 'Love your enemy' as – at most – an ideal which might be realized in some perfect world, but one which is not a reasonable guide to conduct in the actual world we live in. We do not normally practice it, do not expect others to practice it, and do not teach our children to practice it. Jesus' most distinctive teaching, therefore, remains an intriguing but basically untried suggestion."

The situation is analogous to Thomas Jefferson's statements in the Declaration of Independence: "We hold these truths to be self-evident, that all men are created equal...". He and the other signers of the Declaration accepted these principles even as they owned slaves and established a constitution in which Indians and slaves were counted as fractions of persons. Christians accept an idealized system of morality that they cannot possibly attain, just as the founding fathers of the United States accepted a statement of principle that was quite contrary to their actual way of life.

The ethical principles of Christianity stand, therefore, in stark contrast to those of Judaism and Islam, which are quite prepared to kill or wage war against anyone who threatens the faith, or even believers who break the rules.

### XXI. Can America Survive?

So, what is the answer to the question, "Can America Survive?"? This book has addressed that issue in the larger context of what is likely to happen to the planet. And the best guess is that the current mass destruction of the planet will not continue. It will not continue because it risks destroying all animal life on the planet, in addition to mankind. It will not continue because there is a better solution, and that solution – the minimal-regret solution – is to transform the human population immediately, by war, to a single minimal-sized industrial population plus a hunter-gatherer population everywhere else.

All other approaches to the problem do not address the problem that the current human population size is decimating other animal species, and that the best estimate is that the human population size will continue to grow without limit until stopped by catastrophe. And at that point, all animal species, human or otherwise, will be wiped out.

So Can America Survive? The answer is "No!" It will not survive because the planet's biosphere does not need, and cannot afford, a single industrial country of size 300 million people, committed to the generation of prodigious amounts of industrial waste for no purpose other than hedonistic pleasure. The minimal-regret solution is oriented to minimizing the human population, subject to avoiding extinction. Other solutions attempt to maximize human population, no matter what the risk of extinction to human or other species.

Given that the answer to the question is "No," a second question may be asked. Will the surviving small industrial population be "Out of America."? The answer here would also appear to be "No." By its policy of massive immigration of foreign cultures – races, languages, and religions – it is no longer a viable culture at all, but a fractionated multicultural mess that will hold together only as long as the "free" energy of fossil fuels holds out. It is not a people. It is an out-ofcontrol, growth-addicted, energy-addicted, incredibly wasteful and destructive industrial cancer that is destroying not only itself but also its host – planet Earth. Its democratic form of government – a wonderful idea for a homogeneous population in a low-density, low-energy setting -- has slowly paralyzed as the population has been converted to a balkanized hodge-podge of competing races, languages, religions, and cultures. No single culture is in charge any longer. In a sense, the planet is a ship with 229 captains (countries), and the United States is a ship with no captain at all.

Southern California and Florida are now Hispanic colonies. Many US cities are black, Asian, or foreign-language enclaves. Immigrants by the thousands, hundreds of thousands, and millions are swarming over the land, diluting and destroying the Anglo-Saxon culture that established the country and made it great. America is rapidly self-destructing. It is an overpopulated, multicultural,
polyglot, multireligion, multiracial that has lost its identity, sense of purpose, and determination to survive, and will soon cease to exist.

Lest there be any doubt, I am not advocating the overthrow of the US government by force. That would be illegal, and treason. As Jesus said, "Render unto Caesar what is Caesar's, and unto the Lord what is the Lord's." As long as I am an American, I will be a loyal American. I am sickened that America is in the process of "slouching toward Gomorrah" and destroying itself. I am ashamed that my predecessors fought and died for this land (both Canada and the US), and my generation is giving it away. For much of my life, I was busy with pursuing a career and raising a family, and like so many others I never really thought too much about the population problem. I have thought about it now – a lot – and I believe that it is just a matter of time until some group destroys many of the world's cities. It is just too easy to do, and there are just too many very unhappy people in the world.

Should America strike first, to save itself? That is a matter of policy that is not addressed in this book. The purpose of this book is simply to show that there is a strategy – a minimal-regret population – that addresses the problem of industrial destruction of the planet, and that can be implemented very easily by any motivated group.

In his book, <u>The Affluent Society</u>, John Kenneth Galbraith quotes Robert Browning, "Jove strikes the Titans down, not when they set about their mountainpiling but when another rock would crown their work." In his book, <u>Proverbs</u>, John Heywood quotes the English colloquial saying, "Pryde will have a fall; for pryde goeth before and shame commeth after." Behold how the mighty have fallen.

I got the idea to write this book after a trip to Zomba, in Malawi, in June of 1994. My wife, Jackie, and I decided to take a day trip to Zomba, because our friends had raved about it as a beautiful, natural place. I could not believe what I saw. There was a sawmill on the side of the mountain. Old-growth forests were being clear-cut, and replaced with monoculture pine forests that could be harvested again and again. These forests were literally "blankets of death." No animals, no birds, no biodiversity. There was not even any sound – the trees were planted close together and the pine-needle floor of the forest absorbed all sound.

I have now written this book three times. In the first version (written in Malawi), I did not address the issue of what should the world population be. After a friend read this version, she asked me what the population of the world should be. After considerable thought, I decided that this was an ill-posed question. The issue, I decided, is not what the population of the world <u>should</u> be, but what it <u>would</u> be. The human population would be decided by the ecosystem's ability to support mankind, not by mankind's decision about how many of its species it

wanted. I subsequently rewrote the book a second time (mainly in my spare time while working in Ghana).

That was early 1996. I then became very busy and did no further writing. I did continue work at a low level, collecting and analyzing data. Then, in 1998, I decided to "wrap it up." I decided that my point of view that the world population would be decided by the planet and not by mankind was not totally correct. While mankind may not be able to populate the planet to extreme limits, and while the ability of the planet to support industrial civilization may be very limited, mankind can certainly affect both the quantity and quality of human life on the planet. I recalled Azimov's <u>The Thousand Year Plan</u> (now <u>Foundation</u>) that I had read as a boy, and thought about ways of saving the planet (not the galaxy!) from its present rush to destruction.

After some reflection, I decided that a minimal-regret population strategy was superior to the other proposed solutions I had heard about (including the one currently implemented – doing essentially nothing at all), all of which accept a very high risk of ecosystem destruction.

Am I optimistic about the future? You bet I am! The present time is the most interesting, exciting time ever to be alive on planet Earth. Never before has mankind had an opportunity to change things on a global scale. Strong forces are working to destroy the planet and its biodiversity. The challenge is intoxicating. The future of all life on the planet hangs in the balance. Will the world end, in the words of T. S. Elliot's "The Hollow Men," not in a bang, but in a whimper? I do not believe so. Fast times are just around the corner.

But will the end result be pleasant for a lot of people? No, it will not. The current generation of mankind must be held accountable for the destruction of the planet. It was given domain over the Earth, and it has destroyed it, rather than cared for it as a good husband. We have wasted our talents, and even that which we have shall be taken away from us.

One final note, about the use of the masculine pronoun throughout the book. My generation was taught to use "he" to refer to objects of unknown gender; the use of "he or she" was incorrect. This is standard in many languages; it is efficient. To avoid offending anyone or hurting little girls' self-images, however, it is now de rigueur in our inclusive society to use "he or she", along with other cumbersome procedures such as (s)he, the random switching from "he" to "she," or even the outrageous and jarring use of the plural pronoun "their" to refer to a singular antecedent. William Safire and others have written many editorials on this subject, and I will not repeat their arguments here.

While it may be inefficient to avoid using "he" for antecedents of unspecified gender, that is not my reason for preferring it in this book. I have added lots of words to my vocabulary since I was a child, and I am certainly not averse to

change. I always use person-months in place of man-months, and workers' compensation in place of workmen's compensation, and firefighter in place of fireman. I have no problem with this at all. There is quite another reason, however, underlying my preference the masculine pronoun. This book is about war. In this pushbutton age, females may engage in combat and send hundreds or thousands to their deaths by the press of a button. The next war may indeed be a "pushbutton" war, but the war after that will involve men in personal, face-to-face, mortal combat. Brutal, bloody combat. There is no place for women in hand-to-hand mortal combat. That is the responsibility of men. This book is about killing people – billions of people. That, in my view, is the business of men, and that is the reason why I use "he" in this book.

When I was a small boy, I either had a dream or was told of a dream (I can no longer remember which) about a wealthy retired man who went each day to a park to feed pigeons. Each day, a few more pigeons arrived to share the man's largesse. The small group of pigeons gradually grew to a flock, and then a horde. Then, one day, when the man had finished tossing his bag of peanuts to the birds, they were no longer satisfied. They moved on the man. Startled, he lost his balance, and fell from the park bench to the pavement. The pigeons swarmed over the man, pecking and scratching at him, tearing his very eyes from his head.

"What does this dream mean?" the small boy asked his father. "The wealthy man is America," his father answered, "and the pigeons are poor countries that America fed, they are immigrants, they are the legions on whom America expended its bounty. As the old man was overcome by the pigeons, America too will be overrun by immigrants, invaded and rent asunder by the very people it fed."

The Koran (15:4-5) says, "Never did We destroy a population that had not a term decreed and assigned beforehand. Neither can a people anticipate its term, nor delay it (by a single hour)." The world's industrial population cannot and will not be destroyed unless God wills it. So, go ahead and try. If it is His will, the population will be reduced to a viable level and humanity saved, along with the rest of the biosphere's animals. If it is not His will, the population explosion will continue on its current course until the tigers are gone, the panthers are gone, the manatees are gone, the lemurs are gone, the pandas are gone, and every other one of God's beautiful creatures is destroyed.

In his book, <u>How Should We Then Live?: The Rise and Decline of Western</u> <u>Thought and Culture</u>, Francis A. Shaeffer closes with a passage from the Book of Ezekiel (chapter 33). It is worth noting.

"Again the word of the Lord came unto me, saying,

Son of man, speak to the children of thy people, and say unto them, When I bring the sword upon a land, if the people of the land take a man of their coasts, and set him for their watchman:

If when he seeth the sword come upon the land, he blow the trumpet, and warn the people;

Then whosoever heareth the sound of the trumpet, and taketh not warning; if the sword come, and take him away, his blood shall be upon his own head.

He heard the sound of the trumpet, and took not warning; his blood shall be upon him. But he that taketh warning shall deliver his soul.

But if the watchman see the sword come, and blow not the trumpet, and the people be not warned; if the sword come, and take <u>any</u> person from among them, he is taken away in his iniquity; but his blood shall I require at the watchman's hand.

So thou, O son of man, I have set thee a watchman unto the house of Israel; therefore thou shalt hear the word at my mouth, and warn them from me. When I say unto the wicked, O wicked man, thou shalt surely die; if thou dost not speak to warn the wicked from his way, that wicked man shall die in his iniquity; but his blood will I require at thine hand.

Nevertheless, if thou warn the wicked of his way to turn from it; if he do not turn from his way, he shall die in his iniquity; but thou hast delivered thy soul.

Therefore, O thou son of man, speak unto the house of Israel; Thus ye speak, saying, If our transgressions and our sins be upon us, and we pine away in them, how should we then live?

Say unto them, As I live, saith the Lord God, I have no pleasure in the death of the wicked; but that the wicked turn from his way and live; turn ye, turn ye from your evil ways; for why will ye die, O house of Israel?

...When the righteous turneth from his righteousness and committeth iniquity, he shall even die thereby.

But if the wicked turn from his wickedness, and do that which is lawful and right, he shall live thereby."

Isaiah 6:8. Then I heard the voice of the Lord saying, "Whom shall I send? And who will go for us?" And I said, "Here am I. Send me!" He said, "Go and tell this people: "Be ever hearing, but never understanding; be ever seeing, but never perceiving.' Make the heart of this people calloused; make their ears dull and close their eyes. Otherwise they might see with their eyes, hear with their ears, understand with their hearts, and turn and be healed. Then I said, "For how long, O Lord?" And he answered: "Until the cities lie ruined and without inhabitant, until the heavens are left deserted and the fields ruined and ravaged, until the Lord has sent everyone far away and the land is utterly forsaken. And though a tenth remains in the land, it will be laid waste. But as the terebinth and oak leave stumps when they are cut down, so the holy seed will be the stump in the land."

America, wake up!

I recall the story of the man who, on arriving in a foreign land, was so sickened by the squalor, poverty, human misery, and environmental destruction, that he asked God, in prayer, how could He allow such a thing to happen, how could He do nothing. God's response was, "I have not done nothing; I have sent you." God has given man, through technology, the very solution to the problems caused by technology. Civilization has sown the seeds of its own destruction, and thereby, of the planet's salvation. The solution is at hand.

Psalm 51: 16-17. For thou desirest not sacrifice; else would I give it: thou delightest not in burnt offering. The sacrifices of God are a broken spirit: a broken and a contrite heart, O God, thou wilt not despise.

Appendix A. <u>Selected Bibliography</u>

#### Appendix B. Conversion Factors

#### Energy Conversion Factors

The factors for converting from quads (quadrillion BTU) to petajoules to tons of oil equivalent are as follows: 1million tons of oil equivalent (Mtoe) = 41.87 petajoules (PJ) = 41.87 x  $10^{15}$  joules; 1 PJ = 947.8 x  $10^{9}$  BTU; 1 quad = 1 quadrillion BTU =  $10^{15}$  BTU = 25.197 Mtoe. (One BTU = 1 British Thermal Unit = 250 calories = .25 kilocalories (food calories, or Calories), 1 calorie = 4.196 joule, and 1 barrel of oil weighs about 140 kg (306 lbs).)

The US numbering system is used, i.e., a billion is a thousand million, a trillion is a thousand billion, and a quadrillion is a thousand trillion.

## Area Conversion Factors

The original definition of an acre is the amount of land that can be plowed by a man in a day. It now has a standard definition in the English system of measurement. A rod is 5.5 yards, or 16.5 feet. An acre is defined as 160 square rods, or 4840 square yards or 43,560 square feet. A mile is 5280 feet, or 1760 yards, or 320 rods. A square mile is 640 acres, or 102,400 square rods, or 2.590 square kilometers. (An acre is .405 hectare, the common unit of land area in the metric system. An are (yes, the spelling is ARE) is an area 10 meters by 10 meters; a hectare is 100 ares, or an area 100 meters by 100 meters; a square kilometer (1000 meters by 1000 meters) contains 100 hectares.) A square mile is also called a section; there are 36 sections, or subdivisions, in a township. A quarter is a quarter of a square mile, or 160 acres.

# Appendix C. Data Sources

This appendix identifies and summarizes the data source for the analysis and most of the figures presented in this book. The database assembled for this book contains 229 areas, generally referred to as "countries." A table containing some of the data (e.g., population, total fertility rate for 1996) is presented in Appendix D ("Country Characteristics"). Most of the data in this database are from World Bank sources. Each year, the World Bank publishes a CD-ROM containing all of the statistics presented in its annual World Development Indicators book publication. The CD-ROM includes historical data on many series back as far as the year 1960. This product is a superb source of timeseries data on a wide variety of economic, demographic, and social variables. including population, fertility rates, mortality rates, health statistics, economic indicators (e.g., gross domestic product) and social indicators (e.g., school participation rates). Most of the figures presented in this book use data from this source. The notable exception is city population data presented later, which are taken from the United Nations 1993 Demographic Yearbook. Also, data for countries not included on the World Bank CD-ROM were obtained from UN publications.

The <u>World Development Indicators</u> CD-ROM (1998 edition) contains data on 210 countries (or dependencies), 37 years (1960-1996), and 526 socioeconomic time series. (It presents some summary data on up to 227 countries.) The material presented in this book is derived from a database of 229 countries, or just about every country (or economic entity) of population 1,000 or greater that is not an integral part of a larger country. Data on the 19 countries included in this book but not included in the World Bank CD-ROM were obtained from UN publications.

Very few areas of the world are excluded from the list of 229 areas used in this book. The excluded areas are Svalbard and Jan Mayen Islands (administered by /belongs to Norway, pop. 3431, area 62,422 sq. km), Christmas Island (administered by Australia, pop. 2871, area 135 sq. km.), Cocos (Keeling) Islands (belongs to Australia, pop. 555, 14 sq. km.), Norfolk Island (administered by Australia, pop. 2367, area 36 sq. km.), British Indian Ocean Territories (pop. 747, 78 sq. km), and Pitcairn Island (British colony, pop. 66, 5 sq. km.). These areas were excluded because their populations were very small and little of the data used in this book (e.g., population, fertility rates, commercial energy consumption) were available for them over time. All other small islands or dependencies are included in the 229 countries of the list.

Appendix D presents a list of all 229 countries used in this book. This list includes the country name, the three-character country code (COUW98 or couw98) used by the World Bank for the 210 countries of the World Bank CD-ROM), and the three-character country code (COU or cou) used in the data base

assembled for this book. (The COU code is more similar to the English country name than the COUW98 code; it is used in graphs where it is desired to replace a point with a recognizable country label. The COUW98 code is a unique country identified, or "key," used to link tables of the database together.)

The World Bank CD-ROM is extremely easy to use. In most cases, the series presented in the CD-ROM can be extracted for immediate analysis, by "exporting" the data in any one of a number of standard file formats (ASCII text, dBASE, Microsoft Excel, Microsoft Jet (ACCESS), or SAS). In a few cases, data presented in tables or graphs cannot be exported (and must be copied manually), but that is uncommon.

As an aside, it should be recognized that the data included in the World Development Indicators CD-ROM are derived from a variety of sources. In some cases they are the direct result of UN or World Bank activities, such as the World Fertility Survey. In other cases, they are "secondary" data that were obtained from country publications or even from "private" sources. For example, the principal source of demographic data (population, infant mortality rates, total fertility rates, life expectancy at birth) for the period 1950 – 1986 is the book, World Population Growth and Aging: Demographic Trends in the Late Twentieth Century, by Nathan Keyfitz and Wilhelm Flieger. The source for the regional model life tables mentioned earlier is Regional Model Life Tables and Stable Populations, second edition, by Ansley Coale and Paul Demeny, with Barbara Vaughn. In many cases, so-called World Bank data are in fact Keyfitz-Flieger data or Coale-Demeny data, or data from other organizations and individuals. While the World Bank and UN are cited as the primary data sources for most of the data presented in this book, it is right to recognize that those organizations are in fact building on the shoulders of pioneer/giants in the field of demography, and those individuals (and others unnamed here) deserve much of the credit for the existence and quality of the early data.

Appendix D. Country Characteristics

# Appendix E. Population Projections

This appendix describes the population projections that were referenced in the text. It describes the population projection methodology (mathematical models) used by the United Nations and the World Bank. It identifies some shortcomings of those models and describes a much simpler projection model that overcomes those shortcomings.

#### The Cohort-Component Method

The principal method used to make population projections is the "cohortcomponent method." This method is implemented by grouping the population to be projected into demographically similar groups, and estimating the change in the group size one or more years into the future, under the assumed values of total fertility rates, mortality rates, and migration rates. In practice, for country and world population projections the population is grouped by sex and by fiveyear age category (0-4, 5-9,10-14,...). Assumptions are made about the fertility rate (average number of children ever born to a woman), about the timing of births during the woman's lifetime, about the infant mortality rate, about the mortality rate of each of the five year groups, and about the net migration rate for each age group. The population is then "aged" by five years, by applying these rates to the original population. Each age group is referred to as a "cohort" since it may be visualized as "marching along in time," i.e., five-year period by five-year period.

The cohort-component method is described in detail in <u>The Methods and</u> <u>Materials of Demography</u>, Vols. 1 and 2, by Henry J. Shryock, Jacob S. Siegel and Associates, and Elizabeth A. Larmon, and in <u>Guide for Local Area</u> <u>Population Projections</u>, by Richard Irwin (both the preceding publications are available from the Bureau of the Census, US Department of Commerce).

The cohort-component method, the standard population projection method used in demographic studies, is referred to as a "structural" model since the mathematical representation exhibits the salient structural properties of the realworld process being described. The big advantage of the cohort-component method is that it produces estimates of the population in each of the five-year age groups. This level of detail is very useful for market research, educational, or other demographic studies in which it is desired to have a detailed breakdown of the future population by age and sex. Other factors, such as region, race or ethnicity, may be included in the model. In those cases, it is necessary to specify values for the demographic parameters for each region, race, or ethnic group.

Although it is very useful for demographic studies dealing with the "near" future – say five or ten years hence – the cohort-component method is not an appropriate

method for making long-range population projections. The problem is that the method involves an incredibly large number of parameters. In order to apply the method, it is necessary to specify a value for each of the demographic parameters listed above, for each five-year period into the future for which the projection is desired. A typical model involves specifying the proportion of the population in each of 34 age by gender categories (0-4, ..., 80-85, for each sex), a fertility rate, the proportion of the woman's children born in each of the seven age categories 15-19, 20-24,...,40-45, an infant mortality rate for each gender, a mortality rate for each of the 34 age by gender categories, and a net migration rate for each age group. That's 78 parameters, assuming that the population is demographically homogeneous, and that the demographic composition of migrants is exactly the same as the resident population (if it isn't, add another 34 parameters). If the population is not demographically homogeneous - for example, blacks and Hispanics have different birth rates from whites - then the preceding number of parameters must be multiplied by the number of demographically distinct subpopulations.

And we are just beginning. For most countries of the world the preceding parameters are not "stable," i.e., they change over time. For example, immigration (both legal and illegal) has been skyrocketing in the US. Total fertility rates and mortality rates are changing in many countries. If it is desired to project to the year 2100 (20 five-year periods into the future), then values must be specified for the 78 parameters listed above for each five-year period of the future. The upshot of all this is that, while the cohort-component method is a very useful tool for making detailed projections five or ten years into the future, it is a very impractical method for projecting many decades into the future.

And it's not over yet! The preceding list of parameters applies for the case in which it is desired to make a projection for a single country. If the cohortcomponent method is to be used to project the population of the entire world, then the above set of parameters must be specified for every country! In fact, it is possible to group countries with similar demographic characteristics (fertility rates, mortality rates) together, and use what are called "regional model life tables" to specify the parameters for countries for which data are inadequate. The standard regional model life tables are those constructed by Ansley Coale and Paul Demeny.

In any event, even if only four different life tables are used, the number of parameters for the world projection is  $4 \times 78 = 312$  parameters.

The famous statistician John Tukey is said to have made the comment that "with five parameters he could fit an elephant." What he meant is that if an appropriate model is being used to describe a particular process, very few (e.g., two or three) parameters should be required to produce a reasonable representation of the process. This is the principal of "parsimony" promoted by Box and Jenkins in the development of time-series models. It has also been referred to as "Occam's

razor." ("Plurality is not to be assumed without necessity" -- William of Occam, English philosopher, c. 1300 - 1349.) Imagine what John Tukey would have thought of a model involving a minimum of 312 parameters!

The absurd proliferation of parameters of the cohort-component method leads to several related difficulties. The most obvious difficulty is the problem of specifying credible values for each of them over the projection period. Second, the model is not at all "visible," or "transparent." The model has a lot of "face validity" (i.e., there is a close correspondence between the variables and functions of the model with those of the real-world process being represented), but there are so many parameters that it becomes bewildering. With so many parameters, the user has great difficulty describing the impact of or understanding the importance of each of the parameters. The parameters are all interrelated, so that the answer to a "what-if" question about what happens if a particular value of a particular parameter is changed is quite complicated – the answer depends on the particular values used for the scores of other parameters in the model. These parameters are interrelated, so that it is often not reasonable to change one of them without changing others at the same time.

A third problem, and this is perhaps the most serious, is that the ultimate population sizes depend on what the ultimate (future-most) parameter values are, and these cannot be predicted with much confidence for far-distant times. For example, the total fertility rate of the US dropped to replacement level several decades ago. It would therefore have been reasonable to have predicted that the population size would have stabilized. But then the country boosted immigration rates to incredible levels (now over a million a year), so that the country's population soared, rather than leveled off.

These problems would not be so bad if these projections were represented solely as hypothetical projections based on hypothetical specification of scores of underlying parameters. But they are not! The World Bank and UN population projections are in fact represented as "likely" estimates of world population in the future. And that is a terrible misuse of these models.

In modeling terminology, the cohort-component method has a lot of internal consistency, but it lacks validity for making long-range estimates of human population growth. If it is desired to estimate the number of schoolchildren or 15-24 year olds in a country in the next decade, the cohort-component model is the model of choice. A popular book that illustrates an appropriate use of cohort-component models is the book, <u>Boom, Bust and Echo</u>, by David K. Foot with Daniel Stoffman. But to use this method to predict the world population in the year 2050 or 2100 is quite inappropriate. The model contains a vast number of parameters whose values are essentially irrelevant to the problem at hand, and it omits any sensible method of controlling factors that are critically important in determining the long-range size of a population.

Despite its inappropriateness for the problem of making long-range projections, the cohort-component method has been used time and time again as the basis for the population projections issued periodically by the World Bank and the United Nations. The projections are continually being revised because the demographic parameters of the model are continually changing. While that is a little problematic, the real problem is that these models ignore the issue of "feedback" loops by which a country determines its rate of population growth once it has reached levels of low fertility and low mortality (e.g., by immigration or population growth incentives).

## United Nations and World Bank Population Projections

Figures 1 and 2 present the most recent published UN and World Bank global population projections – the so-called "1994" revisions. Figure 1 presents the UN projections. These projections are described in detail in the publication, <u>World Population Prospects</u>, <u>The 1994 Revision</u>. The projection shown in Figure 1 is similar to the one shown on page 98 of that publication, but projected farther into the future (i.e., to the year 2150 instead of to 2050, as in the UN publication, <u>The State of World Population 1994</u>, page 2). As may be seen from the graph, the UN actually presents not one but three projections, corresponding to three different assumptions about future fertility levels. These projections are referred to as the low-fertility variant, the medium-fertility variant, and the high-fertility variant.

It is difficult to describe exactly what each of the three UN projections means, because each one is based on such a bewildering array of assumptions, parameters, and parameter values. A brief summary of the fertility assumptions underlying the three projections is as follows. The medium-fertility variant assumes that fertility falls (or rises, for countries whose fertility levels are currently below replacement level) to replacement level (about 2.1 children per woman) for all countries by the year 2050. The low-fertility variant assumes that fertility decreases faster than for the medium-fertility variant, and falls to an average of 1.6 children per woman. Under this assumption, population growth tapers off by the year 2050 and becomes negative. The high-fertility variant, approaching an average of 2.6 children per woman. Under this assumption, the <u>percentage</u> growth rate falls to about 1% by 2050, but the <u>amount</u> growth rate (i.e., annual amount of increase as a number of human beings) would continue to increase, reaching a level of about 118 million per year in 2050.

In general, countries are dreadfully afraid of shrinking populations – this has been referred to as the "shrinking population" scare. Many have in fact adopted population policies to promote population growth, in the event that it ever becomes negative. Despite the tremendous damage that expanded human population has caused to the environment, no country is willing to reduce its human population, and risk diminished economic or political power, to improve the natural environment. For this reason, the low-variant projection is of no more than "academic" interest. It will not happen voluntarily.

What this means is that, barring war, famine, or some other catastrophe, the actual population in the future is likely to fall somewhere above the medium variant. It could easily match the high-fertility variant, which corresponds to a fertility level just .5 children per woman above replacement level – a level that relatively few countries have achieved. Or, it could easily exceed the high-fertility variant, if the total fertility rate does not fall to 2.6 everywhere by the year 2050. In other words, the UN-designated "medium-fertility" variant would more properly be designated a low-fertility variant, and the so-called "high-fertility" variant would better be called a medium-fertility variant.

In the year 2050, the medium-fertility UN projection is about 10 billion people, and the high-fertility projection is about 12 billion people. In the year 2150, the medium-fertility projection is almost 12 billion people, and the high-fertility variant is about 28 billion people. While 28 billion people may seem a lot, it should be kept in mind that <u>any</u> positive rate of growth eventually results in a population exceeding <u>any</u> specified size.

Figure 2 shows the 1994-revision world population projections of the World Bank. These projections are described in detail in the publication, World Population Projections, 1994-1995 (and shown on page 12 of that publication). The three projections shown in Figure 2 (labeled Slow Fertility Decline, Standard Fertility Decline, and Rapid Fertility Decline) correspond to three different assumptions about fertility. The World Bank refers to the three projections as "fertility decline scenarios," rather than "fertility variants." For the World Bank projections, future fertility levels are determined for the three scenarios according to a mathematical formula that relates fertility to infant mortality and life expectancy at birth. These two variables are projected in turn by fitting a logistic function to past data and extrapolating this function into the future. The fertility levels that result from this rather complex process are shown in a figure on page 12 of World Population Projection, 1994-1995. For the rapid fertility-decline scenario, the total fertility rate (TFR, or average number of children per woman in her lifetime) drops to replacement level by 2050; for the slow fertility-decline scenario, the total fertility rate has dropped to about 2.6 by 2050, and reaches replacement level a few decades later.

Because fertility drops to replacement level for all three World Bank fertility scenarios, the population growth rate eventually falls to zero, and the projections "level off." By the year 2050, the projections are 8.6 billion, 9.6 billion, and 10.1 billion, respectively, for the rapid, standard, and slow fertility-decline scenarios. By the year 2150, the projections are essentially constant, at 9.5 billion, 11.5 billion, and 13 billion, respectively, for the three scenarios.

There is no evidence to support the assumption that fertility will decline to replacement level for all of the world's countries. Since all three of the World Bank projections are based on this assumption, they may be taken with a grain of salt as estimates, or predictions, or forecasts. The standard scenario might be viewed as a lower bound to the global population if human population growth continues unchecked as in the past.

In summary, the UN and World Bank projections are simply projections under three sets (each) of assumptions about the future values of the demographic variables affecting population (fertility, mortality, and migration). The projections involve specification of a very large number of parameters. About the only projection that makes any sense is the UN "high-fertility" variant, since it is the only one that assumes that the population growth rate declines to a positive level (corresponding to a fertility rate of 2.6 children per woman, which is .5 child more than needed for population replacement).

The cohort-component model is a very powerful model that includes representation of all major demographic parameters, and can be used to address a wide variety of complex issues. A cohort-component model can show the effects of lowering fertility, or of terminating immigration, or of adopting a onechild per family policy on population size. This model can help address the issue of where best to allocate limited resources in defining a population policy. To use a cohort-component model to predict the population in 50, 100, or 150 years, however, is like using a sledgehammer to kill a flea, since the population size that far out is affected primarily by the ultimate growth rate, not by the myriad of parameters of the cohort-component model. And the cohort-component projections of the World Bank and UN (excepting the UN high-fertility variant) virtually ignore this issue.

The objection to using the cohort-component method for making long-range projections is not that the cohort-component method is invalid for making long-range projections. It doesn't really matter what method is used to make projections, as long as the model assumptions are clearly stated, understood, and accepted as reasonable. The main problem is that the cohort-component model contains vastly more parameters than are needed for long-range projections. The difficulty that this causes is that it is necessary to predict the value of each model parameter for each year of the projection. Since that model contains hundreds of parameters, it is necessary to predict the values of hundreds of parameters. This cannot be done with much reliability for five or ten years into the future, much less 50 or 100 years into the future.

The key issue is what the planet's ultimate population growth rate will be. Diverting attention from this to the problem of estimating future values of hundreds of demographic parameters simply confuses the issue, and does not contribute to understanding. While the cohort-component method is useful for showing how large a particular country's population could become if current natality, mortality, and migration trends continue (without the intervention of external factors such as war, epidemic or famine), it is more properly used for short-range projections, not long-range ones.

# A Two-Parameter Population-Projection Model

Having briefly described the major population-projection models and found them wanting (or somewhat irrelevant) for long-range projections, we shall now present an alternative, much simpler, method. This chapter will present a two-parameter model of population growth, and show how it may be used to make more understandable estimates of the future population of the world. This model is very "transparent" (i.e., it is clear why the model is behaving the way it does) and addresses explicitly the problem of specifying the ultimate population growth rates (which determines more than anything else the long-range size of the population).

## **Observations and Analysis**

To understand the rationale for the new model, it is necessary to understand two important aspects of human population growth at the present time. In most countries of the world, the rate of population growth is relatively constant or declining. The salient features of population growth are the rate at which the rate is declining, and the rate to which it eventually falls. Note that neither of these parameters is constant for a specific country or small group of countries, but their average values over large groups of countries are approximately constant.

Most World Bank and UN projections assume that the total fertility rate (TFR) for all countries having TFR greater than the "replacement" level of 2.1 children per woman will drop in future years by a prescribed amount. The level of 2.1 allows for two children to replace the female and her mate with a .1 allowance to compensate for mortality. When the TFR eventually reaches the level of 2.1, no further reductions occur. Immigration is assumed to drop to zero in a few years, so when the TFR reaches 2.1, the population for that country stabilizes. The population may not stabilize exactly in the year in which the TFR reaches 2.1 because of population "momentum" – the tendency for a population to grow even after the fertility reaches replacement level because some females born in times of higher fertility have not yet completed their child-bearing years.

For countries in which the TFR is already less than 2.1, the TFR is assumed in the World Bank and UN models to increase to the value 2.1.

In reality, this does not happen, so it is reasonable to ask, "What is going on?". The problem is that the UN and World Bank models do not exhibit credible behavior in the limiting case where fertility falls below replacement level. Without this fix, the UN and World Bank cohort-component models would have the populations of most industrialized countries falling to zero (since any country in which the fertility remains below replacement eventually decreases in size). The ploy of simply raising the TFR to 2.1 is nothing more than a "quick fix" to cover up this model flaw.

A problem with the preceding assumptions and procedures is that they do not correspond to reality. The fertility rate for the US has been at or below the replacement level for many years, and yet the country is achieving astronomical population growth because of immigration. See Figure 3, which is a plot of TFR for the US over the time period 1960-1996, and Figure 4, which is a plot of population growth rate over this same period. Since 1972, the fertility rate of the US has been at or below replacement level, and yet the population growth rate has remained very high – on the order of 1% per year. Some of the growth is caused by the fact that life expectancy is increasing and infant mortality rates are falling, but these effects are transient. And some of the growth is due to population "momentum" – the tendency for a population to keep growing for several decades after its fertility rate drops to replacement level as large cohorts (age groups) born in previous years move through their reproductive years, producing more births than the number of deaths occurring in the smaller, older cohorts. Since the US fertility rate has been at or below replacement level for decades, however, this country could have achieved a stable population size simply by halting immigration, had it chosen to do so. But immigration is good for business, and little emotion has been expressed by the general population for preserving either the country's culture or its environment. Given the country's behavior over the last several decades, and the cultural dissolution that has resulted from massive immigration, there is even less reason now than in the past to believe that the country will decide to stop growing.

Figure 5 plots the rate of natural increase and the net migration rate for the US over the period 1960-1996. The rate of natural increase is the birth rate minus the death rate. Figure 5 shows that in the US, the death rate is less than the birth rate (since the rate of natural increase is positive). The population growth rate is the rate of natural increase plus the net migration rate. Figure 5 shows these two components of population growth rate. Both are high, and contribute to a very high population growth rate. It is interesting to observe from Figure 5 that when fertility levels and the rate of natural increase fell to low levels (about 1970), immigration rose to very high levels. The population of the US would be much smaller today if the massive increase in immigration had not occurred in 1970, and continued.

The US is not the only country in which immigration compensates for low fertility. Figure 6 shows the average fertility (TFR) for all of the G7 (high economic development) countries over the period 1960-1996, and Figure 7 shows the population growth rate over this same period. The same pattern is observed as for the US – although the fertility rate has been far below replacement level for several decades, the population growth rate remains high. (The fertility rates have been low for so long that population "momentum" is not a major factor.) From Figure 7, it is seen that the population growth rate for the G7 nations is about .5% per year over the last couple of decades. Figure 8 plots the rate of natural increase and the net migration rate over time. For that the G7 nations, just as the US, immigration is keeping growth rates high.

It would appear from their population behavior over the past several decades that economically developed countries have an "allergic reaction" to negative or even low growth. Immigration is popular not only in the former British colonies of the US, Canada, Australia, and New Zealand. It is popular in Britain as well. Current plans are to build five million new homes, paving over farmland that has been tilled since the time of the Romans. This destruction of prime farmland would not be necessary if England had a sensible immigration policy, and would repatriate several million recent immigrants and their progeny.

The only countries that have less-than replacement growth levels are economically depressed countries (mostly of the former Soviet Union): Ukraine, Estonia, Latvia, Kazakhstan, US Virgin Islands, Bulgaria, Hungary, Romania, Russian Federation, Belarus, St. Kitts and Nevis, Moldova, Lithuania, Czech Republic, Croatia and Georgia. Since no country of the world aspires to economic depression, these are not the countries that are going to be emulated in the future.

The suggestion of the preceding observations is that the population growth rate of a dynamic economy is largely a matter of government choice – its immigration policy. To some extent, it is also affected by population "momentum." And it is also affected by the fact that life expectancies are increasing and infant mortality rates are decreasing.

It is not difficult to explain why the preceding behavior (high immigration levels) occurs. Presidents of countries never point to negative or zero economic growth as a significant achievement. They want the rate of growth of gross domestic product (GDP) to be as large as possible, and definitely positive. And the easiest way to accomplish this (since it is difficult to motivate industrialized ladies to have babies) is by immigration. With a stable population, the only economic activity is for replacement of worn out or obsolete products. With immigrants, heady growth is possible – more houses, roads, bridges, parking lots, schools, hospitals, cars, household appliances, CDs, movies, cigarettes, health care, bilingual education and legal services for the new immigrants.

This point – that countries will not sacrifice economic growth to save the environment or protect nature – is a key one, and it warrants additional discussion. The paragraphs that follow illustrate, with examples, this side of human nature. This point is emphasized at risk of belaboring it, because it leads to the conclusion that human population growth will not stabilize (fall to zero) of its own accord, but will continue as long as possible, until stopped by external forces.

#### Why Economics Will Triumph over Environmentalism

A few lonely voices have expressed a desire for zero or negative population growth. The major organizations with this objective in the US are Zero Population Growth and Negative Population Growth. To most people, they are regarded as part of the "lunatic fringe," along with radical militia groups. All that is required to achieve negative or zero population growth in the US and other economically developed countries is a halt to immigration – no population control measures are needed at all. But that will never be allowed as long as the industrial complex exists. A few groups have promoted a halt to immigration in the US (e.g., American Immigration Control Foundation, Federation for American Immigration Reform), but they have fared no better than ZPG or NPG. Most Americans simply don't care what the population of the country is. They have not visited Bangladesh, or Haiti, or Egypt, or Malawi, or the Philippines (I have lived and worked in all of these countries), and do not realize how difficult life is at high population densities. For many people, it is worse than "not worth living" – it is a living hell, with no way out but death.

When I was in the seventh grade (Canada, 1952), my teacher, in a geography lesson, expressed her horror at the fact that the population of India was 400 million and counting. India now has almost a billion people – about one-sixth of the world's total. Canada's population in 1952 was 14 million; now it is 30 million. The US population in 1950 was 152 million; now (1999) it is almost double that (272 million). Under its current policy of massive immigration, the US will eventually be right where India was in 1952, and after that right where India is today. Who cares? Not the people in charge. An economy of 400 million people is (other things being equal) larger than an economy of 200 million people. An economy of a billion people is larger than an economy of 400 million people. More jobs, more top-level jobs, more companies, more profits, more people to sell things to.

The case of the Florida panther is a classic example of the reason why the environmentalists' cause is doomed. (See Craig Pittman's article in the November 29 issue of the St. Petersburg Times.) Florida used to be a beautiful, rural state; I lived there in 1953. At that time, you could go down to the beaches near Clearwater with a bushel basket, walk along the beach, and fill the basket in half an hour with seafood – lobsters, scallops, clams, crabs. You can't do that anymore. Florida's natural beauty and bounty has been destroyed by massive, out-of-control immigration. Scenic rural highways have been replaced with four-lane superhighways lined with endless streams of billboards. The Everglades Swamp, one of the natural wonders of the world, has been virtually destroyed by

overpopulation and economic development – agriculture, roads, and urban sprawl.

In 1950 Florida was heavily agricultural but had not yet succumbed to today's pervasive urban sprawl. The population was about two million, compared to today's 15 million (the size of all of Canada in 1950!). Because of massive migration to Florida, the Florida panther's habitat has been largely destroyed or made unusable by human invasion. The panther has been reduced to the point of extinction. There are now an estimated 30-90 panthers living in a single colony in the Everglades. The species is now so concentrated that a single disaster, such as a disease, could extinguish it.

Federal law calls for establishing three panther colonies around Florida, but local residents are up in arms. They receive \$1,000 for each privately owned deer killed by predators, but threaten to shoot any that kill livestock. Of twelve Texas cougars released into a candidate habitat for the panther, seven have been killed by rifles, bows, and snares. Residents claim that it is foolish to attempt to bring back an animal that roamed the state when it was undeveloped by man. Some residents are now arguing the extinction is God's plan for the panther. Others ask what the state will do if a panther kills a small child.

So there you have it. All the panthers in the world are not worth one human child. And under America's massive-immigration policy, there are going to be more and more people in Florida, not fewer. The only way to protect small children from panthers, if small children are everywhere, is to wipe out the panthers. More immigrants and more population mean more money for America's industrialists and politicians. Saving the panther will hurt profits. It will require an end to immigration and population growth. And it may cost the life of a human child. And that is why the Florida panther will quickly be exterminated from the Florida wild.

Although the Florida manatee population is much higher than the panther populations (2,600 v. 30), it too is an endangered species because of man's insatiable desire to populate all land. The following is a summary of their current status, according to the Save the Manatee Club: "Many manatees are needlessly killed by human activities such as collisions with boats, being crushed or drowned in floodgates and canal locks, ingestion of fish hooks, entanglement in monofilament line, crab trap lines and nets, and loss of their habitat and food sources to coastal development."

What is needed to save the manatee? Stop boating, fishing, and crabbing in the rivers where they live, and stop destroying their habitat. Stop immigration to the US. Stop the massive economic development of Florida. Reduce Florida human population. Are any of there things going to happen? Of course not – that would hamper economic development, and interfere with man's right to use nature as he sees fit.

The population of Florida in 1950 was about two million people (see <u>Florida in the</u> <u>21<sup>st</sup> Century: The Challenge of Population Growth</u>, by Leon F. Bouvier and Bob Weller). It is now almost 15 million, and growing by about 200 thousand per year. It has about two million blacks and about two million Hispanics – either of these minority groups now comparable in size to the total population in 1950. The population of Florida is projected to exceed 25 million within a few decades. As Florida slouches toward the population density of a Third-World nation, who will speak for the Florida panther?

What I have said about the Florida panther and the manatee is illustrative. It applies to other animals in other places. The wolf, hunted to extinction in the US a hundred years ago, will never be allowed more than a symbolic presence. Although there are hundreds of millions of human beings in the US, if any of them are killed by wolves, the wolf will be destroyed again.

There is an economic motivation for immigration in addition to the tremendous opportunity to produce new goods for the immigrants. According to economic theory, economic efficiency is promoted whenever a country obtains a product in which it is at a competitive disadvantage from a country in which the product is produced at a competitive advantage. It is to the US' advantage to have their babies produced, raised, and trained by high-birth-rate countries, and then shipped to the US for use. The fact that we destroy our land and culture by doing this is irrelevant to economists – a mere "externality." (See <u>The Economist</u>, Oct. 3, 1998 for a good, compact explanation of how trade increases economic production.)

What is an "externality"? It is any "noneconomic" (nonmonetary) effect of an action: a factor "outside" of the economic analysis. In practice, the standard approach for addressing externalities is simply to identify them, to state that they have been taken into account, and then to proceed with the action that is most efficient from an economic point of view, regardless of the nature of the "externalities." This is what is done, for example, by means of "environmental impact" statements. Once the impact is identified, it is simply declared that the economic benefits outweigh the environmental damage, and the economically beneficial action is taken. If the environmental impact is too negative, it is simply ignored. In a desperately overpopulated poor country, it is not unusual to see a five-year development plan calling for a 10% increase in the population size, with the catastrophic environmental impact of the 10% increase totally ignored. The essential choice is between increased economic activity and decreased economic activity, and a government will always choose in favor of increased economic activity.

Many people do not realize the supreme importance placed on economic growth by our government. In the 1930s, Simon Kuznets introduced the uniform set of national accounts that became the prototype of Gross Domestic Product (GDP). The horrible feature of using GDP as a measure of progress is that it does not discriminate between desirable and undesirable economic activity. If you smash a rock through someone's car window, the GDP goes up by the amount of money required to produce and install a new windshield. If you break the replacement window, the GDP increases again. If you burn your neighbor's house down, a large increase in GDP occurs. If you break your neighbor's arm, the cost of the medical care that would otherwise not have been extended is added to GDP.

If you stop caring for your children and place them in a commercial day care center, then GDP goes up. If your children spend money at the movies instead of spending time with you, GDP goes up. If you give up all of your leisure time and work two jobs, GDP goes up. If you divorce your wife and set up two households instead of one, GDP goes up. If you cause a massive pollution problem that costs billions to clean up, GDP goes up. If you drain an oil well or cut down a forest, GDP goes up. If an earthquake or hurricane occurs causing massive damage, GDP goes up.

Wipe out families, deplete natural resources, and savage the environment, and GDP goes up. In summary, any time that any money changes hands for any reason, GDP goes up. There is no consideration of the good or ill effects causing or caused by the transfer. Nonmonetary social or environmental costs are irrelevant to GDP. Even Simon Kuznets, the creator of the GDP, has criticized its perverse nature. See the article, "If the GDP is Up, Why Is America Down," by Clifford Cobb, Ted Halstead, and Jonathan Rowe, in the October 1995 issue of <u>The Atlantic Monthly</u> for more discussion of GDP (and of an alternative measure of progress, the Genuine Progress Indicator, or GPI).

In other words, all economic growth is good economic growth. Economic costbenefit studies were used decades ago to demonstrate that there would be an economic benefit to "channelizing" Florida's wild rivers. The result: the US Army Corps of Engineers hence proceeded to destroy these rivers wholesale. The value of the wildlife in these rivers was of no serious consequence. It contributed little or no economic value, and was hence destroyed without further consideration. It was what economists refer to as an "externality" – a factor outside of the economic analysis.

#### Sustainable Development Is Not Sustainable

As bad as this sounds, worse is yet to come. The buzzword these days is "sustainable development" – a magical type of economic development that does not harm the ecology or environment. That term is a complete oxymoron. In fact, if you read the complete definition, you will see that sustainable development is not sustainable at all. The report, <u>Sustainable Human</u> <u>Development: Concepts and Priorities</u>, by Sudhir Anand and Amartya K. Sen, discusses the concept of sustainable development. (This is the discussion paper originally prepared as a background for the <u>Human Development Report 1992</u>.) The following definition is taken from the 1987 World Commission on Economic Development (WCED) report, <u>Our Common Future</u>:

Sustainable development is ... "development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

The concept of "needs," in particular the essential needs of the world's poor, to which the overriding priority should be given; and
The idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.

The tremendous shortcoming in this definition is that there is no requirement to conserve <u>specific</u> resources. It does not matter what mineral resources (e.g. fossil fuels, minerals) are depleted or what species are extinguished. Resources are considered as fungible and may be substituted in any fashion, as long as future generations are able to satisfy their "human needs."

Anand and Sen point out that any attempt by one generation to leave the world as it found it is unlikely and infeasible. Instead, all that is required to comply with the definition is that nonrenewable resources that are used up must be replaced with something else. What it means is that once the last tiger has been destroyed in order to use his penis in an Oriental aphrodisiac, it can be "replaced" by an ox's penis, since that is just as effective. Or, after the Yemenis have destroyed the last black rhino to use his horn for the handle of a young Yemeni's dagger, the rhino horn may be replaced by plastic or wood, which works just as well. When the last musk deer has been killed for his musk gland (used in the production of perfume), musk-deer musk may simply be replaced by a similar synthetic chemical, with no detrimental impact on economic efficiency.

So much for "sustainable development." In fact, there is no such thing. The term is a "doublespeak" falsehood perpetrated to suggest that there is some kind of nonharmful economic activity. Human economic activity destroys exhaustible resources – especially species – and they are **never** replaced.

All of the species lost over the past 10,000 years will never be back. The black Atlas mountain lion is gone forever, replaced by the economist's "generic" lion. The species lost by the massive deforestation of the past few decades are gone forever. They will never be replaced. The Carolina parakeet, the ivory-billed woodpecker, and the passenger pigeon are gone forever. Oh well, what does it matter, their loss has not hurt GDP by one iota. Julian Simon has written at length on this topic, and his books may be consulted to understand an economist's view of the world on this matter. Nothing is sacred; everything is replaceable. All that matters is that GDP increase.

The point to the preceding observations is that, in today's world, all countries promote economic growth, and most promote population growth as well (as the easiest road to economic growth). The empirical evidence is that even if a country industrializes and fertility drops to low levels, steps will be taken to maintain a positive population growth rate. The figures presented earlier show that, on average, the population growth rate of a country will fall to about .5% -- not to zero, and certainly not to a negative rate.

# A Further Look at the Data

Note that the assumption that the growth rate of all countries will fall to .5% is very optimistic. Such a low growth rate has been observed only for countries that have been industrialized for a long time. There is increasing evidence that many countries may **never** industrialize! Until checked by war, famine, or disease, it is quite reasonable to believe that the population growth rate for many countries will never decrease to .5%.

In making long-range population projections, there are really only two issues of concern. First what will the ultimate population growth rate be? That issue was just addressed: it is (optimistically) on the order of .5% per year. The second issue to address is what is the rate at which the population growth rate will fall.

Figure 9 shows a plot of population growth rate over time for six groups of countries. (Note: The average population growth rates shown in Figure 9 are <u>weighted</u> averages, in which the population growth rate of each country in the average is weighted by the country's population.) The country groupings are the economic groupings used by the World Bank in many of its publications. Worldwide, although population is increasing at an **amount** of about 80 million people a year, the **rate** of population increase is in fact falling for many countries (e.g., from 3% growth a year to 2.5% a year). As would be expected, the rate of decline of the population growth rates is higher for countries that are at very high growth rates, and lower for countries at low growth rates.

The reason for looking at the population growth rates for groups of similar countries instead of individual countries is that the growth rates for individual country may vary all over the place, and the growth rate for an individual country may vary tremendously from year to year. It may increase in one year and decrease in the next. Or, it may increase for many years and then decline for many years. It is possible to make definitive statements only about the average rate of decline over time (the longitudinal or temporal average) and over groups of countries (a cross-sectional or spatial average).

The average rate of decline of the global population growth rate in recent years is .033 (e.g., a one-year decrease in the population growth rate from 1.45% to 1.42%). The average rates of decline in recent years for the six country groups are as follows:

Asia: .060 Developed Countries: .048 Latin America and the Caribbean: .041 Middle East / North Africa: .080 Sub-Saharan Africa: 0 Oceania: 0

The countries included in each grouping are shown in Appendix D. (The average rates of decline listed above are "weighted" averages. That is, they are the sum of the rates of decline for each country in a region multiplied by the proportion that its population is of the regional total population.)

Three points are emphasized about rates of population growth. First, even though the rate may seem small, e.g., 1% per year, the amount of the increase over many decades is very large. For example a 3% growth rate for 100 years results in a population 19 times as large as the original population! A 1% growth rate for 100 years results in an increase of 170% over the original size. The second point is that a growth rate of <u>any</u> positive amount, if continued, will eventually result in a population larger than <u>any</u> specified size. In other words, positive growth of any amount cannot continue indefinitely.

Third, the oft-heard statement that the <u>rate of increase</u> of global population growth rates is falling is very misleading. Although the percentage growth rate may not be increasing, the annual increment (amount) of increase in population size may actually be increasing each year! If a person jumps out of an airplane, his rate of fall to the ground increases at first and then it decreases as wind resistance becomes large. Although his rate of fall to the ground may be decreasing, or even stabilize to no increase at all, he will still hit the ground at a speed of over one hundred miles per hour! The same is true of population growth. Even if the rate of increase of the population growth rate may be slowing, the annual amount of increase may be very large, and growing in size. For example, if the rate of increase of the population growth rate dropped to zero and the population growth rate stabilized at 1% a year, the population would continue to grow by a larger <u>amount</u> every year – first at 60 million per year, then 60.6 million per year, then 61.2 million per year, and so on, by ever larger annual amounts.

# Specification of the Two-Parameter Population Projection Model

At this point we have discussed both of the determinants of population growth for the two-parameter population-projection model in some detail. We have observed that the population growth rate (in percent) is falling by an amount of about .033 (percentage points) per year worldwide, and that for various economic groups of countries the rate of decrease in the population growth rate varies from zero to about .08 (percentage points). For economically successful industrial nations, the population growth rate stabilizes at about .5%. Having addressed the issue of estimating these two parameters, we have in fact specified the twoparameter population-projection model.

In mathematical terms, the model is:

$$p_t = p_{t-1}(1 + r_t)$$
  
 $r_t = r_{t-1}(1 - d_t)$ 

where

p<sub>t</sub> = population at time t (e.g., 6 billion);

 $r_t$  = population growth rate at time t (e.g., 1.4% = .014); and

 $d_t$  = amount of decrease in the population growth rate from time t-1 to time t (e.g., .033% = .00033);

with the constraint that once the population growth rate decreases to a specified lower limit, lim (e.g., .5%), no further decrease occurs.

A few examples will be given to illustrate the model. The current rate of world population growth is about 80 million per year, or about 1.4% of six billion. More precisely, the population in 1995 was 5.675 billion and the population in 1996 was 5.755 billion. The annual increase of 80 million from 1995 to 1996 represents a percentage increase of 80/5675 = 1.41%. The annual rate of decline (amount of decrease) in the global population growth rate is about .033 percentage points per year, so the predicted rate of growth for the period 1996 to 1997 is 1.41% - .033% or 1.377%. Three years later (1999-2000), the projected rate is 1.278%. Continuing at an annual rate of decline of .033% a year, the population growth rate will fall to .5% in another 24 years, or the year 2024. If it is assumed that the ultimate population growth rate is .5%, then no further decline in the population growth rate occurs, and after that year the population continues to grow at the fixed rate of .5%.

#### Population Projections of the Two-Parameter Model

Figure 10 presents several population projections using the two-parameter population-projection model. Each projection represents a different combination of rate of decline of the population growth rate and the ultimate population growth rate. Although the current estimate of the average annual decline in the worldwide population growth rate is .033, and the best estimate of the ultimate growth rate is .5%, projections based on several different parameter values are performed to present a "sensitivity analysis." The figure shows projections for all nine combinations of three growth decline rates (.033, .044, .056) and three ultimate growth rates (0, .25%, .5%). It is hence possible to see at a glance the "sensitivity" of the ultimate population to the parameter values.

One thing is as graphically apparent as it is mathematically obvious. If the population growth rate does not ultimately drop to zero, the population keeps on growing and growing. While the ultimate rate adopted by the G7 countries (.5%) may seem small, it will eventually reach a population size of any specified size – and a very large size within just a century.

The second item of note is that even if all countries drop their rates of population growth to zero, the ultimate population size varies substantially depending on how fast the population growth rate falls.

Well, there you have it. A two-parameter global population growth rate model. The observer can see at a glance the impact of varying assumptions about the model parameters. Quite a departure from the 300-parameter World Bank and UN models. It is patently clear to the model user what population sizes will result from assumptions about growth rate declines and ultimate growth rates.

In order to identify a projection as "more likely" or "less likely," it is necessary to specify how likely is each combination of values of the two model parameters. In statistical decision theory, this is referred to as specifying a "subjective probability distribution" for the model parameters. A simple example of this is to simply rate each parameter combination as "less likely" or "more likely."

In today's world, countries have varying degrees of control over the two parameters. In the US, for example, the current total fertility rate (TFR) is less than two children per woman, and a zero or negative population growth rate could be achieved at the stroke of a pen simply by terminating immigration. In countries that currently have high fertility rates, the situation is not as simple. Even if a one-child-per-family policy is adopted, as was done in China, because of population "momentum" the population continues to increase for many years, as the large numbers of children produced by high fertility rates go through their childbearing years. In order to project the populations for regions (groups of countries) or individual countries, the same two-parameter approach may be applied, with the values of the parameters selected to best represent the country or country group.

Figure 11 shows regional projections for Asia for nine combinations of the growth rate decline and final growth rate parameters. These combinations of parameter values include the current value for the growth rate decline parameter for Asia (.06), and values above and below the current value (i.e., .04 and .08). The ultimate population growth rate values are the same as for the global projections presented earlier (i.e., 0, .25%, and .5%).

Figure 12 shows country projections for the United States for nine combinations of the model parameters. The rate-of-decline parameter is set at the current regional observed value (.048, rounded to .05) and two values above and below (.04, .06), and the final population growth rate values to the same as used for the global projections (0, .25%, .5%). (Note: Because they are so large, the numbers on the vertical scale of Figure 12 were printed in exponential format. The number preceding the E is to be multiplied by ten raised to the power indicated by the number following the E. For example, 6E+08 means 6 x  $10^8$ , or 600,000,000. That is, the (positive) number following the E indicates how many zeros follow the number preceding the E.)

The regional and country projections can be used to make global projections, simply by summing all the regions or countries. Doing this produces about the same projections as are produced by the global projection model. (They are slightly higher, for mathematical reasons (Jensen's inequality).) While it is of interest to compare the global projections produced by these three different methods as a kind of consistency check, global projections are more appropriately obtained from the two-parameter global projection model rather than by summing the regional or country projections. The reason for this is the same reason as was cited in criticism of the UN and World Bank projections – using the regional or country models to make global projections involves a profligate number of parameters. That is, using the regional models to make global projections involves 12 parameter (2 for each of six regions) and using the country models to make global projections involves 12 parameter (2 for each of six regions) and using the country models to make global projections) and using the country models to make global projections involves 12 parameter (2 for each of six regions) and using the country models to make global projections).

The point to this appendix is to shed some light on the arcane subject of population projections, and show that much of the complexity is neither necessary nor desirable. The results presented in this book are not sensitive to the particular projections accepted, since it is accepted that the world's population is already far too large to be stable. In any event, discussion of global population usually includes reference to **somebody's** population projection. I will generally use my own projections, since they are based on a simple, logical model in which the influence of key model parameters is very apparent. With the background of this appendix, however, the reader may judge for himself whether

some other projection of interest has merit, and then assess whether some significant conclusion presented in this book would differ if a different projection were used.

Appendix F. Graphs Showing the Relationship of Various Indicators of Quality of Life to Commercial Energy Use

This appendix presents a number of graphs that show the relationship of various economic and social indicators to commercial energy use. These indicators are accepted measures of the quality of life, and they are routinely presented in reports that assess social and economic status.

Figures 13 and 14 show the relationship of gross domestic product per capita to commercial energy use per capita, for 1996, for 157 countries for which data were available (from the World Bank World Development Indicators CD-ROM). Figure 13 uses the usual "linear" scales, and Figure 14 uses "logarithmic" scales. The logarithmic scales make it easier to see the relationship for poor countries. From either graph, it is easy to see the strong relationship of GDP to commercial energy use. Simply said, without energy, a country is poor.

(For the mathematically inclined.... The "linear regression" line shown in the figures is a line fitted through the scatter diagram of points according to the mathematical criterion of "least squares." The "coefficient of determination, or "R<sup>2</sup>" value, is the proportion of the variance (a standard measure of variation) of GDP per capita that is attributable to commercial energy use per capita. The value .73, for example, means that 73% of the variation in the logarithm of GDP per capita is associated with variation in the logarithm of commercial energy use per capita.)

Figures 15-25 show the relationship of various measures of human welfare to commercial energy consumption. These include basic indicators such as life expectancy at birth and access to clean water, and also composite measures such as the UNDP's Human Development Index and Gender-Related Development Index. (The meaning of these indicators is described below.)

Before discussing the significance of these figures, a few technical remarks will be made. Each of the figures is generated from data from the World Bank <u>World</u> <u>Development Indicators</u> CD-ROM. Each figure shows the relationship of a measure of human welfare to energy consumption (use). If the data are plotted for individual countries, a "scatter diagram" is obtained, as in Figures 13 and 14. Scatter diagrams do not show relationships very clearly, and so it is standard practice to estimate the average relationship of one variable to the other. A variety of statistical procedures is available for determining the average relationship of one variable to another. Figures 13 and 14 use one such method – linear regression analysis. This method is widely used by scientists, but it is not as general or as easy to understand as some other procedures. Instead of using linear regression analysis, Figures 15-25 will use a more general method that is very easy to understand. Most of the data in each graph are for the year 1996, but a few are from 1994. The number of countries used in each graph varies, since the CD-ROM does not present data for every country for every year. The points plotted on the figures are averages of groups of countries, starting with the countries that use the least commercial energy. For example, the plotted points in Figure 15 are averages of groups of 11 countries. The leftmost point on the curve has a GDP value equal to the average GDP for the eleven countries having the lowest commercial energy use, and an energy-use value equal to the average energy use for those eleven countries. The number of countries used in the averages is the smallest number that produces a reasonably smooth curve.

There are a number of other "smoothing" methods that could have been used to show these relationships, including moving averages and locally-weighted regression smoothing ("loess," "lowess"). If the relationship between the two variables being plotted is linear, a linear regression line may be fitted to the data, as was done in Figures 13 and 14. These regression models are called "parametric" models because they involve a small number of parameters (e.g., the slope and intercept of the regression line). For more complex relationships, nonparametric smoothing methods work better; these are the methods used in Figures 15-25.

(If the number of countries used in each group average divides evenly in to the total number of countries, then each plotted point is an average based on the same number of countries. Otherwise, the last point will be an average involving fewer countries than the other points, and it will be of lower reliability. To avoid this problem, the last plotted point on each graph is taken as the average of the countries having the highest energy consumption, using the same number of countries as in each of the other plotted points. This means that if the number of countries used in each group does not divide evenly into the total number of countries, the last two plotted points are averages involving some of the same countries. This means that, unlike the other plotted points, the last two plotted points are correlated in this case.)

In each graph, commercial energy use (or consumption) is measured as "kilograms of oil equivalent (koe) per capita." (Some of the graphs use the term "kilograms of oil equivalent per capita," and some use "kilograms of oil equivalent per capita per annum." The latter term is technically more accurate, but since all of the graphs refer to per capita energy use in a single year (1996), either term is acceptable.) The axes on each graph are described verbally, and also in terms of the variables in the database. For example, the measure of gross domestic product used is the "purchasing power parity gross domestic product in constant 1987 dollars." The name of the data field containing this variable is gdp96. The name of the data field containing the energy consumption variable is koep96. There is no need to note or remember these field (variable) names. They are placed on the graph simply to be able to reconstruct it, if needed. Similarly, the database and table names at the bottom of the graph (where these variables are

stored) may be ignored; they too are included so that the graph may be reconstructed.

It should be remembered that the curves shown in Figures 15-25 depict <u>average</u> relationships, and that for each of the human-welfare measures being considered, individual countries may have values that differ substantially from the average value shown by the curves (as illustrated in Figures 13 and 14).

Figure 15 shows the relationship of gross domestic product to energy consumption. As energy consumption increases from very low levels, there is an approximately linear relationship of GDP to energy consumption. The relationship of GDP to energy consumption is very close to linear if energy consumption is plotted on a logarithmic scale, as in Figure 14. That is, each successive doubling of energy use produces about the same increment of increase in GDP.

As energy consumption reaches very high levels (over 4,000 koe per capita per annum), the curve levels off. This means that energy-rich countries are not as efficient as poorer ones in converting (commercial) energy into GDP. (Partly, this is because commercial energy consumption is a smaller component of total energy consumption in poor countries.)

Figure 16 shows the relationship of total fertility rate (the average number of children born to a woman in her lifetime) to energy use. The graph shows that as energy use increases up to about 2,500 koe per capita per annum, TFR declines. At that point, the TFR has dropped to approximately two children per woman.

Figure 17 shows that female life expectancy at birth increases as energy consumption increases, and tapers off when energy use reaches about 2,500 koe per capita per annum. At that level of energy use or higher, the female life expectancy at birth is about 75-78 years.

Figure 18 shows that the infant mortality rate declines until energy use reaches about 3,000 koe per capita per annum, with no additional decline in the average infant mortality rate after that level of energy use. At 3,000 koe, the infant mortality rate is about 12 deaths per 1,000 live births.

Figure 19 shows that access to safe water increases until energy use reaches 2,500 koe per capita per annum. At that level of energy use, the access is at a high level (95%) and no further increases occur as energy use increases.

Figure 20 shows that access to sanitation increases until energy use reaches about 1,500 koe per capita per annum, and then tapers off (at an average level of 80% access). (The definition of "access to sanitation" used for the World Development Indicators CD-ROM database are as follows. Access to sanitation refers to the share of the population with at least adequate excreta disposal facilities that can effectively prevent human, animal, and insect contact with excreta. Suitable facilities range from simple but protected pit latrines to flush toilets with sewerage. To be effective, all facilities must be correctly constructed and properly maintained. Access to sanitation in urban areas is the urban population served by connections to public sewers or household systems such as pit privies, pour-flush latrines, septic tanks, communal toilets, and other such facilities.)

Figure 21 shows that the illiteracy rate drops until energy use reaches 2,000 koe per capita per annum, and then remains constant (at about 10% average illiteracy) for higher energy use levels.

Figures 22-25 show the relationship of several indicators of human welfare that are published annually by the United Nations Development Program (UNDP). These indicators are the Human Development Index (HDI), the Gender-Related Development Index (GDI), the Gender Empowerment Measure (GEM), and the Human Poverty Index (HPI). These measures are composite measures that reflect several aspects of human welfare. The formulas for calculating these measures are complicated. The actual value of the measure does not have a simple meaning; it is the relative value among countries that is of importance.

The methodology for calculating these measures will not be described or summarized here, but the factors on which these measures are based will be mentioned. The HDI is a composite measure that is based on longevity (as measured by life expectancy at birth), educational attainment (measured by adult literacy (2/3 weight) and primary, secondary, and tertiary school enrolments (1/3 weight)) and standard of living (measured by GDP per capita (PPP\$, as was used in Figure 13). The GDI is based on the same factors as the HDI, but in a way that reflects disparities in achievement between men and women. The GEM reflects the relative empowerment of women and men in political and economic spheres of activity. It includes women's and men's percentage shares of administrative and managerial positions and their percentage shares of professional and technical jobs.

The HPI measures deprivation in longevity, knowledge, and a decent standard of living. Deprivation in longevity is measured by the percentage of people not expected to survive to age 40; deprivation in knowledge is measured by the adult illiteracy rate; deprivation in a decent standard of living is measured by a composite of three variables: the percentage of people with access to safe water, the percentage of people with access to health services, and the percentage of moderately and severely underweight children under the age of five.

(Up to 1996, the UNDP expressed the human development indicators as fractions having values between zero and one. In 1997, it switched from fractions to percentages (between zero and one hundred). The HDI, GDI, and GEM were introduced prior to 1997, and so all of the figures presented here use

fractions for those indicators (in order to maintain consistency of the measure in our database). The HPI was introduced in 1997, as a percentage, and so it is expressed as a percentage here.)

Figure 22 shows that the HDI increases to a high level when commercial energy use reaches about 2,500 koe per capita per annum. Figure 23 shows the same behavior for GDI. (These measures are highly correlated, so this is not surprising.) The GEM increases until energy use reaches about 1,000 koe, and then rises slowly after that. As energy use increases above 5,000 koe per capita per annum, the GEM actually declines. The reason for this is that many of the very-high-energy-consumption countries are oil-rich states that are Arab/Islamic, with limited empowerment of women. Figure 25 shows that the HPI drops until energy use reaches 1,000 koe, and then levels off.

For every measure of human welfare considered in Figures 15-25, an annual per capita commercial energy use level of about 2,000-3,000 kilograms of oil equivalent – say 2,500 koe – is required to achieve a moderately high level of performance. This figure is substantially below the current USA consumption rate of 8,000 koe, and much higher than the consumption rate in the world's poorer countries.

Figures 26-28 describe the distribution of commercial energy use for the countries of the world. (These figures omit the US Virgin Islands, whose annual per capita energy use is 34,303 koe – the largest for any country, and far greater than the next largest (Qatar, at 12,248). Including this very large figure for this very small country accomplishes nothing more than stretching the horizontal axis of the graphs so that the data for the other countries become very compressed.) These figures show that the majority of countries (about 55%) have per capita commercial energy consumptions of 1,000 koe or less, and that only 25% have per capita energy consumptions of 2,500 koe or more. In other words, in the world of today, relatively few countries have per capita energy use levels that enable high levels of performance on the socioeconomic indicators considered above.

#### Appendix G. Low-Intensity Nuclear War

This appendix presents an analysis showing the damage that can be caused to the Earth's city population by nuclear war. Although interest centers on the damage that can be caused by low-level nuclear war (i.e., an attack of 1,000 small nuclear bombs), damage curves are presented that show the damage over a wide range of attack sizes. The appendix begins with a discussion of the statistical distribution of city sizes, and then proceeds to examine four different types of attack. These four attacks have different "payoff functions." The first attack targets population, the second one energy use, and the third one cities in countries having high levels of biodiversity. The fourth attack is a "combination" attack whose payoff function is a combination of population, energy use, and biodiversity.

## **City Characteristics**

As discussed in Chapter XIII, a list of all the planet's cities of population 100,000 or more was compiled; a portion of the list is presented in Appendix H (for all cities having population of one million or more). Figures 29-33 show some statistical properties of the world's cities having population of 100,000 or more. Figure 29 shows a frequency distribution of the populations ("sizes") of the world's cities of size 100,000 or more (and capital cities even if smaller than 100,000). This figure shows that about 90% of these cities have populations less than one million. Figures 30 and 31 present this same information, but in the form of cumulative frequency distributions. Figure 30 uses the same city size categories as Figure 29 (i.e., one million), and Figure 31 does not use categories at all (i.e., each "category" is one thousand, the unit of measurement).

Figure 32 is a Lorenz curve for the city populations. A Lorenz curve is a plot of the cumulative proportion of population versus the cumulative proportion of cities, where the cities are ordered in order of increasing size (i.e., starting with the smallest city). Figure 32 includes some statistics about the distribution of city sizes. The mean (arithmetic average) city size is 484 thousand; the median city size (the size of the middle city if they are arranged in order of size) is 214 thousand. Of particular interest is a statistic called the Gini index, or the Gini coefficient. It is a measure of the extent to which the distribution of city sizes differs from a uniform (perfectly "equal") distribution, in which all cities have exactly the same size. It measures the area between the observed Lorenz curve and a hypothetical Lorenz curve of absolute equality, expressed as a percentage of the maximum area under this line. (The hypothetical Lorenz curve of the distribution in which all cities have the same size is a diagonal line from the point (0,0) to the point (1,1).) Hence a Gini index of zero represents perfect equality of city sizes, and a Gini index of 100 represents complete inequality (i.e., one city contains all of the population). The Gini index for the Lorenz curve of city
populations is 59%. That is a very high value, indicating that Earth's cities vary substantially in size.

The Gini index is usually used to describe the distribution of income or consumption expenditures. The reason why it is of interest here is that it is a measure of the vulnerability of cities to attack. For a Gini index of zero, all cities have the same population. From an attacker's viewpoint, no city is more "lucrative" than another – a large bomb dropped on one city produces the same amount of damage (population killed) as on any other city. If some cities are particularly large, however (corresponding to a high value of the Gini index), then an attacker can achieve much greater damage by attacking cities in order of their population size.

Figure 33 presents a "reverse" Lorenz curve. It contains the same information as Figure 32, but from a different viewpoint. It plots the cumulative proportion of population as a function of cumulative proportion of cities, where cities are ordered in order of decreasing size, i.e., from largest to smallest (instead of from smallest to largest, as in Figure 33). The reason why this plot is of interest is that it corresponds closely to what is called a "damage curve," or "payoff curve" in defense analysis. The curve shows what proportion of the total city population will be destroyed if all cities above a certain size are attacked. The only problem is that the axes are "normalized" over the range 0-1.

The point to the above look at the city size distribution was to show how very vulnerable the planet's cities are to attack. As noted, the Gini index of the Lorenz curve for the planet's city populations has a value of 59%. This is a very high value. What it means is that with a very small number of bombs an attacker can cause a very large amount of damage to the city population – population damage far out of proportion to the proportion of cities attacked.

With this quick look at the city size distribution, we shall now examine the vulnerability of cities more closely. Specifically, we shall examine the damage caused by several different types of attack.

# The Effects of Nuclear War: The Population Attack

Figure 34 shows a plot of the total population killed versus number of weapons (atomic bombs) expended, under the assumption that a single bomb detonated on a city destroys all of the population in that city. Although this is not true for very large cities, this assumption is adequate for the "policy analysis" purposes of Chapter XIII. Figure 34 is constructed by listing all of the cities in decreasing order of population (i.e., from largest to smallest), and then plotting the cumulative population of this list. (This is the same procedure used to construct the "reverse Lorenz curve" described above.) The first point on the graph is New York City, with a population of 19,670 thousand (i.e., 19 million). The last city is

Mata-Utu (capital of Wallis and Futuna Islands, with population one thousand), corresponding to the cumulative population 1,639,584 thousand (which, of course, is the total population of the city list).

The curve of Figure 34 corresponds to an "optimal" attack. That is, for a specified attack level (number of weapons), there is no other selection of targets that would produce a higher total population killed. A plot such as Figure 34 is referred to as a "damage curve" or "payoff curve." The optimal damage curve exhibits what is called "diminishing returns" – each additional weapon produces less damage (population killed) than the preceding one.

From Figure 34 it is seen that an attack size of about 1,000 weapons achieves a damage of 1.2 billion population killed, or about 74% of the entire population of the list of 3,385 cities. The attack size of 1,000 is located near what is called the "knee" of the damage curve. The knee of the curve is the point at which the marginal damage (i.e., increase in damage caused by one additional weapon) is equal to the average city size. Below (to the left of) the knee, the targets are referred to as "lucrative" – the damage caused per weapon is above the average city size. Above (to the right of) the knee, the damage caused per weapon is below the average city size.

As was observed earlier, city sizes vary a lot. The Gini index of the city list is 59%. What it implies is that a lot of damage can be caused with just a few bombs. With an attack size of just 1,000 bombs, or about a quarter of the total city list, approximately three-quarters of all of the city population can be destroyed.

Clearly, mankind's cities are extremely vulnerable to nuclear attack. A very modest-sized attack can destroy most of the city population. (The attack size of 1,000 weapons is referred to as "modest," or "low intensity" since it is small compared to the tens of thousands of nuclear bombs currently in the inventories of the nuclear powers.) With current technology, it is quite feasible for any "rogue nation," terrorist group, or other organization to assemble 1,000 "suitcase" atomic bombs, and destroy three quarters of the world's urban population.

A portion of the list of cities is presented in Appendix H. The largest 332 cities of the city list are listed in decreasing order of size (starting with the largest, New York City, and including all cities of population of one million or more). For the attack just considered, in which population is targeted (i.e., the targets are selected so as to maximize the total population killed), the order in which cities are attacked is simply their rank-order when ranked in order of decreasing population size.

The city list shown in Appendix H includes the UN country code (COUW98), the country name (COUNTRY), the city name (CITY), the city population in thousands according to the 1993 UN <u>Demographic Yearbook</u> (POP93), the 1993

annual per capita energy consumption (KOEPC93), the country total energy consumption in thousands (KTOE93), the number of plant species in 1994 (PLANTS94), plant species times population in millions (BIO93), and a payoff value for a "combination" attack to be discussed later (MINRNKRNKD).

Note that for the "population" attack, all cities with population greater than or equal to 368 thousand are targeted, and all cities with population less than this are not. As a result, any country for which all of the cities are of size less than 368 thousand is not targeted. For the population attack, 128 countries are attacked, and 229 - 128 = 101 are not. (The minimum city size targeted is referred to on the graph as a "Lagrange multiplier." The Lagrange multiplier is a quantity that arises in the optimization procedure used to determine which cities are attacked. It is the marginal payoff on each payoff curve, for the specified attack size (number of weapons = 1,000). In economics the Lagrange multiplier is usually called a "shadow value.")

Figure 34 has several parts. In addition to the payoff curve for the total attack, it also shows the payoff curve for three countries: the USA, Canada, and Brazil. The country name is shown in bold letters at the top of the graph. Figure 34 (USA) shows that 107 cities are targeted in the USA, resulting in a payoff of 82% of the city population killed. The twenty largest cities are listed on the figure, along with their populations (in thousands). Figure 34 (Canada) shows that 13 cities are targeted in Canada, producing a payoff of 70% of the city population killed. Figure 34 (Brazil) shows that 40 cities are targeted in Brazil, resulting in a payoff of 64% of the city population killed.

The "population" attack targets 74% of the city population. For the countries that are attacked, the proportion of the city population that is targeted varies around this percentage, ranging from 29% to 100%. The proportion targeted in a particular country depends on the distribution of city sizes for that country.

We use the term "population targeted" instead of "population killed" or "population destroyed" since it is likely that some of the population in each attacked city would survive. Given data on the distribution of city population and the height of burst and yield of the bomb, it is possible to estimate the proportion of the population that would be killed by direct effects (heat and blast) from books such as <u>The Effects of Nuclear Weapons</u>. It is also possible to estimate the proportion of the population killed from indirect effects, such as from radioactive fallout. This book does not address that level of detail.

Appendix I ("Attack Summaries") contains a list showing the damage to each of the world's 229 countries for the "population" attack (and for the other attacks to be discussed). The countries are sorted in order of the population targeted. The list in Appendix I includes the total city population (field TotCityPop), the number of cities attacked (CntryAttSize), the population targeted (i.e., the population of

the targeted cities, TrgtdPop), and the targeted population as a percentage of the total city population (TrftdPopPct).

# The Energy Attack

The next attack to be considered targets industrial capacity. The estimated energy consumed by each city is used as a surrogate for industrial capacity. This estimate is simply the city population multiplied by the per capita energy consumption (use) of the country in which the city is located. The procedure for determining the order of attack for the industrial-capacity, or "energy" attack is very similar to the procedure for determining the order of attack for the population attack. The only difference is that the "payoff value" of each attack is the city's energy consumption rather than its population. The cities are ranked in descending (decreasing) order of energy consumption; their energy-consumption rank order specifies the order in which they are attacked.

Appendix I includes a list of the number of cities and population targeted for the "energy" attack. This attack does not differ a great deal from the population attack. The major difference is that cities in very poor countries are unlikely to be attacked, even if they are rather large. This is, of course, because their total energy consumption is low, even though their populations may be rather large. Note that the order in which cities within the same country are attacked is exactly the same as for the population attack. The reason for this is that since the per capita energy consumption is taken as the same for all cities within the same country, the ranking of cities by population is exactly the same as the ranking by population times per capita energy consumption.

Figure 35 shows the cumulative energy targeted as a function of number of weapons, for the "energy" attack. Cities vary even more by energy consumption than by population, and so the proportion of target value that can be destroyed by 1,000 bombs is even greater than for the "population" attack – 83% rather than 74%. (If the Gini index of the city energy consumption distribution were calculated, it would exceed the value of the Gini index for the city population distribution.)

Figure 36 shows a plot of the cumulative city population targeted, if cities are ranked in order of targeting for the "energy" attack. Comparing it to Figure 34, it is seen that, for attacks of specified size, the "population" attack always has a higher population killed (as must be true, since it is the "optimal" population attack). For the attack size of 1,000, 60% of the population is killed in the energy attack, whereas 74% of the population is killed in the population attack.

Figure 36 includes the payoff curves for the USA, Canada, and Brazil. The numbers of cities attacked in these three countries for the energy attack are 313, 41, and 11. These differ somewhat from the numbers for the population attack

(107, 13, and 40). The number of cities attacked in the US and Canada are much higher for the energy attack than for the population attack, since the US and Canada have much higher per capita energy consumptions than Brazil.

# The Biodiversity Attack

The third attack considered is an attack intended to reduce human populations in countries having large numbers of plant species. This attack is referred to as a "biodiversity" attack. The reason for considering this attack strategy is that large human populations in countries (like Brazil) that have substantial biodiversity are rapidly destroying that biodiversity. By reducing the human population in these countries, the biodiversity can be maintained. For the biodiversity attack, the target value is taken as the city population times the number of plant species for the country. This measure of value does not have a simple physical interpretation, as did the measure of value for the population and energy attacks (i.e., city population and estimated city energy consumption). It does have the property that if two cities have the same population, then the one in the country having the larger number of plant species has a greater chance of being targeted. (Lest there be any confusion, in the biodiversity attack it is not the plant species that are attacked, but people living in countries having large numbers of plant species.)

Figure 37 shows the payoff function for the biodiversity attack. This attack is very efficient – with 1,000 bombs, a total of 90% of the payoff value is targeted.

Figure 38 shows the population killed in the biodiversity attack as a function of attack size (number of bombs). For an attack size of 1,000 weapons, 72% of the city population is targeted. The attack results in slightly less population killed than the population attack.

Appendix I contains a list of the number of cities and population targeted in each country for the "biodiversity" attack. The big difference between this attack and the preceding two is that cities in countries having large numbers of plant species are targeted, even though they may have rather modest populations. For example, all of the 187 cities of Brazil are targeted for the biodiversity attack, whereas the number of cities attacked in the USA is only 132 and the number in Canada only 3.

# The Combination Attack

The fourth attack considered is a "combination," or "mixture" of the three preceding ones. The order of attacking the cities is determined by a two-step process. First, the minimum of the target order under each of the three preceding attacks is calculated. For example, if a city is the second city to be

targeted in the population attack, the fourth city to be targeted in the energy attack, and the 39<sup>th</sup> city to be targeted in the biodiversity attack, then this value is 2. While this ordering might have determined an attack order, it does not, since many cities have the same value. A second step is conducted by ranking all cities having the same first-step ranking in decreasing order of population. This two-step procedure produces a strictly ordered list of targets. (This composite ranking is specified in the field MINRNKRNKD in the Appendix H table.)

Appendix I contains a list of the number of cities and population targeted in each country for the "combination" attack. Any city that ranked highly in any of the first three attacks ranks highly in the combination attack. If a city has a large population, or has a high energy consumption, or is located in a country with a large number of plant species, it will have a good chance of being targeted in the combination attack.

Figure 39 shows the payoff function for the combination attack. For this attack, the payoff is a complicated function of population, energy consumption per capita, and biodiversity index, and so it does not lend itself to a simple interpretation. A major reason for considering the combination attack (rather than restricting attention to the energy or biodiversity attacks) is that data are missing for some of the countries (and hence all cities in those countries) for energy consumption and for biodiversity.

When data are missing, a city is not attacked. For example, data were not available for Russia on biodiversity, and so no Russian city was included in the biodiversity attack. No population data are missing. By considering the combination attack, a very large city will be attacked, even if the biodiversity or energy-consumption data are missing. Although not all 229 countries were attacked in the population and combination attacks, all 229 countries were subject to attack, since data were available on the payoff variable for all 229 countries. Energy data were available only for 192 countries, so only 192 countries were subject to attack in the energy attack. Biodiversity data (number of plant species in 1994) were available only for 113 countries, and so only 113 countries were subject to attack in the biodiversity attack.

Figure 40 shows the population killed as a function of attack size for the combination attack. For an attack size of 1,000 weapons, 72% of the population is targeted in the combination attack.

Figure 40 includes payoff functions not only for USA, Canada, and Brazil, but also for a number of other countries.

The four attacks described in this appendix are but simple examples of nuclear attacks. While they may be helpful in discussing concepts, they ignore all sorts of factors that would be taken into account in developing an actual attack plan. For example, if it is decided to emphasize targeting of energy consumption, then

hydroelectric dams, coal fields, oil fields, and gas fields could also be targeted. High-value industrial targets might also be targeted. Locations of religious significance might be avoided (or targeted). Better measures of industrial capacity could be constructed than the simple one used here (energy consumption). The likelihood that 1,000 small surface bursts could cause a "nuclear winter" is believed to be low, but that issue should be examined.

The preceding attacks are all what are called "one-sided" attacks, i.e., there is no consideration of defense. This restriction is not inappropriate for a "suitcasebomb" attack, against which there is little defense. If the attack were implemented by means of ballistic missiles, however, consideration should be given to defense, and to attacking military targets as well as targets of intrinsic value (i.e., to a counterforce attack). Finding an optimal solution for the two-sided (attack-defense) "min-max" problem is easily done by the method of lagrange multipliers or game theory, but this is not discussed here. During the 1950s and 1960s, a tremendous amount of research (lagrangian optimization, game theory, simulation) was conducted on analytical models of nuclear warfare, and the field is a mature one. (See Peter L. Bernstein's <u>Against the Gods: The Remarkable Story of Risk</u>, Chapter 9, for a brief history of game theory.) Appendix H. <u>City Characteristics</u>

## Appendix I. Attack Summaries

Attack Summary, "Population" Attack

Attack Summary, "Energy" Attack

Attack Summary, "Biodiversity" Attack

Attack Summary, "Combination" Attack

## Appendix J. Lest We Forget

Epitaphs in the Chittagong War Cemetery 1939-1945:

Sergeant P. McL. Colvin, Royal Armoured Corps, Airborne, 1<sup>st</sup> April 1945, Age 21: "Into the mosaic of victory we lay this precious piece"

LDG Aircraftman D. T. Arbuckle, Royal Air Force 24<sup>th</sup> June 1942, Age 20: "My darling son, God be with you until we meet again, Mother"

Corporal J. Murphy, The Royal Welch Fusiliers, 2<sup>nd</sup> April 1943, Age 32: "In loving memory of my dear husband, James, rest in peace"

Private S. F. Lynn, The Royal Sussex Regiment, No. 5 Commando, 10 April 1944: "In loving memory of my dear son, so sadly missed by all, 'God bless you, Daddy'"

Lieutenant Colonel J. D. A. MacLaren, The King's Own Scottish Borderers, 20<sup>th</sup> April 1944, Age 39: "I have fought a good fight, I have finished my course, I have kept the faith"

Lieutenant Colonel G. P. Richards, MC, The South Staffordshire Regiment, 15<sup>th</sup> April 1944, Age 37, "Escaped from a Japanese Gaol, to die gloriously with the Chindits in Burma"

Craftsman E. W. Collins, REME, 13<sup>th</sup> August 1945, Age 34: "Deep in my heart he is living, yet I loved him too dearly to ever forget"

Private A. H. Henderson, The Border Regiment, 8<sup>th</sup> May 1945, Age 22: "Sleep, my son, in a foreign land, always remembered, mother and brothers"

Flight Sergeant W. P. Ramsey, Navigator (Bomber), Royal Air Force, 4<sup>th</sup> January 1944, Age 29: "At the going down of the sun and in the morning, we will remember him"

Flight Sergeant A. G. Ross, Wireless Operator/ Air Gunner, 4<sup>th</sup> January 1944, Age 21: "These laid the world away; poured out the red sweet wine of youth"

Gunner F. W. Ainger, Royal Artillery, 12<sup>th</sup> February 1943, Age 30: "I will always remember you, darling. To me you were all the world"

Signalman J. E. Proctor, Royal Signals, 8<sup>th</sup> April 1944, Age 31: "In memory of my dear husband. Ever remembered by his loving wife & son John"

Gunner E. O. Last, Royal Artillery, 27<sup>th</sup> January 1944, Age 29: "Farewell, son and brother. His heart for his home, his life for his country"

Pilot Officer W. B. Rice, Pilot, Royal Air Force, 23 April 1942, Age 23. Born Charleston, South Carolina, USA: "He gave his life for freedom"

Lieutenant Jameshed S. Manekshaw, Royal Indian Army Service Corps, 14<sup>th</sup> May 1944, Age 37: "O rest, dear partner of my days. I pledge my troth to thee always"

LDG Aircraftman C. W. Parratt, Royal Air Force, 5<sup>th</sup> May 1944, Age 22: "Just a cog in the wheel of justice, but true British steel"

## Appendix K. A Family Experience with the Japanese

Two of my uncles fought the Japanese in World War II. They were captured by the Japanese, and served as prisoners of war for nearly four hard years. Their experiences shed light on the Japanese mentality and capability to wage war. The experience of my uncles provides an insight into this capability, and for that reason it is summarized here.

My uncles were part of a force of 1,975 that had been sent by Canada to present a "show of force" to the Japanese. The British had already decided that Hong Kong could not be defended, and had started to withdraw their forces. They decided it would look good, however, if the Empire put up a token show of force, instead of simply abandoning Hong Kong without a fight.

As a result, Churchill asked Canada to send troops to Hong Kong. The troops were never told that the position there was considered untenable by the British, and that they were in fact evacuating for that very reason. They were sent to their deaths by Canada, out of a perverted sense of patriotism for the British Empire. While it is common practice to sacrifice a unit in combat for the sake of winning a battle, this move made no sense whatsoever. The British had written Hong Kong off. It was lost. Sending 1,975 Canadians to their doom accomplished nothing. Indeed, even today it engenders contempt and disgust for the Canadian leaders who would knowingly sacrifice the lives of brave young Canadian soldiers for no good reason at all.

Two regiments, the Royal Rifles of Canada and the Winnipeg Grenadiers, were sent to Hong Kong. Uncle Bob and Uncle Frank had volunteered for the Royal Rifles. These were volunteer units of citizen soldiers. They were poorly trained and ill-equipped for battle.

They arrived in Hong Kong on November 16, 1941. On December 8, the Japanese moved against Hong Kong, just as they did against the US in Pearl Harbor (still December 7 there). The battle lasted for seventeen days. Canadian losses were 276 killed, died of wounds, or murdered.

Uncle Bob told me of the last day – Christmas Day, 1941. It was horrible. Accounts of the battle are presented in <u>The Royal Rifles of Canada in Hong Kong</u> (Hong Kong Veterans' Association of Canada, now out of print), in <u>Canada's</u> <u>Glory</u> by Arthur Bishop and in <u>Hell on Earth</u> by Dave McIntosh (both still in print).

(In what follows I talk mainly of Uncle Bob and not of Uncle Frank. Uncle Bob is very much alive, and the knowledge I have of the battle of Hong Kong is from him. Unfortunately, Uncle Frank died before I was able to talk with him about his wartime experiences, and so I don't know details of his time there. I believe that Uncle Frank was in C Company.)

The Japanese were brutal. On December 25, soldiers entered the emergency hospital at St. Stephen's College. There were about 100 patients and seven nurses. The Japanese bayoneted about seventy of the wounded patients in their beds. They shot and bayoneted the two doctors who tried to prevent the massacre. They raped all of the nurses and killed five of them.

The Royal Rifles served with highest distinction. They fought without rest for the five days before Christmas, and were collapsing from exhaustion by Christmas Eve. The Japanese forces overwhelmed the island, and at 3:15 p.m. on Christmas Day, Major General Charles Maltby, commander of the garrison, advised the governor of the island that further resistance was futile (the Japanese force numbered 30,000).

The regimental commander, British Brigadier Cedric Wallis was informed of the decision to surrender (by Lt. Col. R. G. Lamb), but because the order was not in writing, he refused to accept it. He was determined to hold out, regardless of how many Canadian lives it may cost. Further resistance was in fact futile. The men were outnumbered and exhausted, with little ammunition. There was no food or water, no artillery support, and no mortar ammunition. In front of the Royal Rifles was a massive Japanese army, well armed with artillery, mortars, and tanks, and behind them was the sea.

Despite the situation, at 10 o'clock in the morning of Christmas Day, Brigadier Wallis ordered Lt. Col. Home (commanding officer of the Royal Rifles regiment) to send a company to attack a group of bungalows on the ridge in Stanley Village. Lt. Col. Home protested that such an attack in daylight would most likely be unproductive of any results but additional Canadian casualties. Brigadier Wallis was unmoved, and D Company was ordered to proceed on this suicide mission. (Uncle Bob was in 16<sup>th</sup> Platoon, D Company.) They attacked in broad daylight (a hot, bright, clear day) without artillery support, and were virtually wiped out – of about 130-140 men, 26 were killed and 75 were wounded. The 17<sup>th</sup> and 18<sup>th</sup> Platoons took the brunt of the attack. Sgt. Macdonnel's graphic description of this last assault is on pp. 84-91 of <u>Royal Rifles of Canada in Hong Kong</u>. A British officer fighting alongside also describes this "last glorious charge of the Canadian, up through the grave-yard and into the windows of the bungalows at the top.... Very few of the Canadians survived that gallant charge."

Sgt. Macdonnel ordered the men to fix bayonet and charge, and they did so "with fearful war-whoops." In hand-to-hand combat, they drove the Japanese from their much superior position on high ground, and occupied the bungalows. The Japanese regrouped and proceeded to shell the houses. With ammunition running out and the houses being blown to pieces, Macdonnel received orders to pull back to the Stanley Prison Fortress. At about 5 p.m. in the afternoon, D Company collected its wounded and returned to Stanley Fort.

At six o'clock in the evening Brigadier Wallis ordered Lt. Col. Home to send another company down Stanley Village road. A Company was ordered to proceed, in full view of the Japanese. A heavy barrage of Japanese artillery killed six and wounded twelve.

A second time, verbal orders were relayed to Brigadier Wallis that the forces had surrendered at 3 p.m. Once more he refused to comply until a written order was received. Word was circulated, however, that all units would cease firing unless attacked. C Company received word of the surrender at 9 p.m. Brigadier Wallis did not fly the white flag of surrender until he received the written surrender order, at 2:30 p.m. the following day (Dec. 26). The gallant men of the Royal Rifles of Canada – a small band of volunteer citizen-soldiers against a large, battle-hardened army – had fought and died in bloody combat three hours longer than necessary.

<u>The Royal Rifles of Canada in Hong Kong</u> presents a scathing critique of the defense of Hong Kong, from the bad decision of Canada to send reinforcements to Hong Kong in the first place, to the unfortunate placing of the Regiment under the command of an inept British officer, to the faulty tactics that resulted in needless casualties. The critique also cites inadequate training, shortage of arms and ammunition, shortage of vehicles, inadequate time for acclimatization and rest from a long sea voyage. The Canadian forces were not briefed on their objectives or adequately trained for war (battle tactics). They were sent to fight a vastly larger, battle-hardened Japanese force that knew how to wage war. The Royal Rifles were repeatedly ordered to attack in broad daylight without benefit of mortar or artillery support against a fresh, well-equipped Japanese army that had both artillery and air support. "Hong Kong has come to be regarded as one of the major mistakes of the British and Canadian Governments during World War II."

Several good books have been written about Hong Kong, and I will not present details here. These books include:

- 1. <u>The Royal Rifles of Canada in Hong Kong 1941-1945</u>, Hong Kong Veterans' Association of Canada (many excerpts from Sgt. Lance Ross's diary)
- 2. Seventeen Days Until Christmas, by Léo Paul Bérard
- 3. Hell on Earth, by Dave McIntosh
- 4. <u>Canada's Glory: Battles that Forged a Nation</u>, by Arthur Bishop

A fascinating video on the topic is <u>The Valour and the Horror</u>, written by Terence and Brian McKenna and presented by History Presents (The History Channel, Canada). The first (of three) segment, Episode 1: Savage Christmas: Hong Kong 1941 is about Hong Kong.

The fall of Hong Kong was just the beginning of the war for Uncle Bob and Uncle Frank. Uncle Bob and Frank served as prisoners of war for a year in Hong Kong.

After capture, they were marched north to North Point Camp (on Hong Kong Island), where they remained a few months under terrible conditions. They were then moved to Sham Shui Po on Kowloon (the Chinese mainland).

One hundred and thirty three prisoners died in North Point and Shamshuipo Camps. Most died from diphtheria, dysentery, and avitaminosis, others from malaria, beriberi, pneumonia, tuberculosis, pellagra, and other diseases. In September of 1942 diphtheria was epidemic. As many as seven men died in a single day. The epidemic continued until October 21; Uncle Bob's friend Ted died on October 14.

On August 20, 1942, four members of the Winnipeg Grenadiers escaped from North Point Camp. They were captured, tortured for a week, and then executed. A Japanese Sergeant Yoshida later boasted about killing four Canadians with his sword. The word in Camp was that they had been beheaded; the bodies were never found.

On January 19, 1943, they and 664 other prisoners were marched to the docks and departed at seven o'clock in the morning on board the coastal freighter the Tatu Maru, for Japan.

They landed in Nagasaki (on the island of Kyushu) at 8 p.m. on January 22. Uncle Bob and Uncle Frank were separated at that point. Uncle Bob was put on a train and sent to the Omine Camp (within a hundred miles of Nagasaki, and 40 miles from Fukuoka) to work in a Japanese coal mine. Uncle Frank was sent to work in a dockyard/shipyard near Tokyo.

The Japanese treated the Hong Kong prisoners of war horribly. They were forced to work as slave labor under the most barbaric treatment and conditions. They were underfed, underclothed, overworked, and denied medical treatment. A total of 267 of them perished from starvation, beriberi, and other disease.

Twelve Canadians died in Omine Camp from malnutrition and overwork.

Omine Camp was a square camp, with two enclosures. There was no heat in the wintertime, and was quite cold – a few degrees below zero. The only heat was in the steam room. The steam room was for drying clothing and off limits. If you, against the Japanese wishes, spent time in the steam room, you would get pneumonia and die. And then there were the sand fleas. Winter and summer, they would crawl into your clothing, and "bite like Hell," particularly at night if you wore any clothes at all.

The POW commander in the Omine Camp was a British then-Major Robertson. Col. H. G. G. Robertson was a medical doctor, a member of the Royal Army Medical Corps. According to Uncle Bob, "he never bent an inch." The Japanese had confiscated all jewelry and watches. Major Robertson made a sundial out of wood, bearing the inscription, "Yet nightly pitch my moving tent; a day's march closer home."

Uncle Bob told me that "Major Robertson gave us courage and Huey Lim gave us hope." Huey Lim was a Eurasian who had been assigned to the unit after they were captured. His father was English, his mother Chinese. He could read Japanese, which he said was the same as Chinese except for affixes (prefixes, suffixes). Regularly, parts of newspapers were left in the mines – wrappings for food and the like. Huey Lim would read these newspapers to the prisoners. When you are totally cut off from everything, news becomes incredibly important. From the dates on the newspapers and the place names (Coral Sea, Guam), they learned how the war was progressing.

Huey Lim was in large measure responsible for the high morale in the camp. It was speculated that he was a plant. In any event, "he served our camp well." Right after the two atomic bombs were dropped on Hiroshima and Nagasaki, Huey Lim disappeared. He went out to find out what was taking place, and was never seen again.

Toward the end of the war, when it was clear that the Japanese were losing, the Japanese leadership decided that it would be a good idea to execute all of the prisoners of war – "dead men tell no tales." But the war ended sooner than expected, before the plan could be carried out. Uncle Bob and Frank would have been executed had it not been for the dropping of the atomic bombs on Hiroshima and Nagasaki. Uncle Bob kept a diary throughout the war. He told me that when the war ended he was on his last legs, and would not have lasted much longer.

The war was over for Uncle Bob on August 15, 1945. In September, he passed by Nagasaki. He said that where the bomb dropped there was nothing left of it – "it was like a wheat field." How do I feel about Nagasaki and Hiroshima? They were a good start.

The Japanese are formidable enemies. Another good book on the subject is <u>The</u> <u>Rape of Nanking</u>, by Iris Chang. <u>The Comfort Women</u>, by George Hicks discusses the history of the Japanese military comfort system.

Throughout the war, our family and many others waited anxiously for news about our soldiers, and prayed for their safe return. During the war, my great uncle Ernest Barter (Grandfather Leslie's older brother), wrote a poem about the boys who served in Hong Kong. Until now, it has never been published.

#### Tribute to the Brave Boys in Hong Kong by Ernest Barter (1871-1959)

When our empire was invaded, And called for volunteers They quickly joined the Royal Ranks Though some were young in years.

Which caused some tender hearts to ache And hoary heads to bow. Where scarcely eighteen summers Shone on some youthful brow.

They heeded not the ties of love That bid them fondly stay. But crossed the wide Pacific span To the thickest of the fray.

Where cannons roar like thunder And shrapnel swiftly flies And drums and trumpets sounding To drown all dismal cries.

'Twas there they fell those gallant youths As poets oft-times said The brilliant sun that never sets Where slumbers England's dead.

Now let the palm tree and poppy flowers Their leaves by soft winds fan, The graves of those who slumber there 'Neath Hong Kong's bloody sand.

O loved ones sleep and take thy rest, A calm and sweet repose Where the summer winds blow soft and fair Where blooms the tropic rose.

Till the Lord shall give that quickening shout And set the captives free When death shall loose its venom sting The grave its victory.

# Appendix L. Selections from the Bible and Koran

### Old Testament

Gen. 21:12. ...it is through Isaac that your offspring will be reckoned.

Ex. 22:21. Do not ill-treat an alien or oppress him, for you were aliens in Egypt.

Ex. 34:9. The Lord, the Lord, the compassionate and gracious God, slow to anger, abounding in love and faithfulness, maintaining love to thousands, and forgiving wickedness, rebellion and sin. Yet he does not leave the guilty unpunished; he punishes the children and their children for the sin of the fathers to the third and fourth generation.

Lev. 18:22. Do not lie with a man as one lies with a woman; that is detestable.

Lev. 19:18. Do not seek revenge or bear a grudge against one of your people, but love your neighbor as yourself. I am the Lord.

Lev. 19:33. When an alien lives in your land, do not ill-treat him. The alien living with you must be treated as one of your natural-born. Love him as yourself, for you were aliens in Egypt. I am the Lord your God.

Lev. 24:22. You are to have the same law for the alien and the native-born. I am the Lord your God.

Lev. 25:23. The land must not be sold permanently, because the land is mine and you are but aliens and my tenants. Throughout the country that you hold as a possession, you must provide for the redemption of the land.

Lev. 25:39. If one of your countrymen becomes poor among you and sells himself to you, do not make him work as a slave. He is to be treated as a hired worker or temporary resident among you; he is to work for you until the Year of Jubilee. Then he and his children are to be released, and he will go back to his own clan and to the property of his forefathers. Because the Israelites are my servants, whom I brought out of Egypt, they must not be sold as slaves. Do not rule over them ruthlessly, but fear your God. Your male and female slaves are to come from the nations around you; from them you may buy slaves.

Lev. 26:31. I will turn your cities into ruins and lay waste your sanctuaries.

Num. 11:27. A young man ran and told Moses, "Eldad and Medad are prophesying in the camp." Joshua, son of Nun, who had been Moses' assistant since youth, spoke up and said, "Moses, my lord, stop them!" But Moses replied,

"Are you jealous for my sake? I wish that all the Lord's people were prophets, and that the Lord would put his spirit on them."

Num. 12:6. When a prophet of the Lord is among you, I reveal myself to him in visions, I speak to him in dreams. But this is not true of my servant Moses, he is faithful in all my house. With him I speak face to face, clearly and not in riddles.

Num. 16:28. Then Moses said, "This is how you will know that the Lord has sent me to do these things, and that it was not my idea:...

Deut. 2:34. At that time we took all his towns and completely destroyed them – men, women, and children. We left no survivors.

Deut. 3:3. ... We struck them (Bashan) down leaving no survivors.

Deut. 7:2. ...and when the Lord your God has delivered them unto you and you have defeated them, then you must destroy them totally. Make no treaties with them, and show them no mercy. Do not intermarry with them. Do not give your daughters to their sons or take their daughters for your sons, for they will turn your sons away from following me to serve other gods, and the Lord's anger will burn against you and quickly destroy you.

Deut. 7:2. ...and when the Lord your God has delivered them over to you and you have defeated them, then you must destroy them totally. Make no treaty with them, and show them no mercy. Do not intermarry with them. Do not give your daughters to their sons or take their daughters for your sons, for they will turn your sons away from following me to serve other gods, and the Lord's anger will burn against you and will quickly destroy you.

Deut. 7:16. You must destroy all the peoples that the Lord your God gives over to you. Do not look on them with pity and do not serve their gods, for that will be a snare to you.

Deut. 8:30. ...man does not live on bread alone but on every word that comes from the mouth of the Lord.

Deut. 9:5. It is not because of your righteousness or your integrity that you are going to take possession of their land; but on account of the wickedness of these nations.

Deut. 10:12. ...what does the Lord your God ask of you but to fear the Lord your God, to walk in all his ways, to love him, to serve the Lord your God with all your heart and with all your soul and to obey the Lord's commands.

Deut. 10:19. And you are to love those who are aliens, for you yourselves were aliens in Egypt.

Deut. 15:11. There will always be poor people in the land.

Deut. 18:19. But a prophet who presumes to speak in my name anything I have not commanded him to say, or a prophet who speaks in the name of other gods, must be put to death. You may say to yourselves, "How can we know when a message has not been spoken by the Lord? If what a prophet proclaims in the name of the Lord does not take place one time, that is a message the Lord has not spoken. The prophet has spoken presumptuously. Do not be afraid of him."

Deut. 21:10. On going to war, and treaties.

Deut. 22:5. A woman must not wear men's clothing, nor a man wear women's clothing.

Deut. 23:19. Do not charge your brother interest, whether on money or for anything else that may earn interest. You may charge a foreigner interest.

Deut. 24:16. Fathers shall not be put to death for their children, nor children put to death for their fathers; each is to die for his own sin.

Deut 24:17. Do not deprive the alien or the fatherless of justice, or take the cloak of the widow as a pledge.

Deut. 28:43. The alien who lives among you will rise above you higher and higher, but you will sink lower and lower.

Josh. 6:21. They devoted the city (Jericho) to the Lord and destroyed with the sword every living thing in it – men and women, young and old, cattle, sheep, and donkeys.

Josh. 8:26. Twelve thousand men and women fell that day – all the people of Ai. For Joshua did not draw back the hand that held out the javelin until he had destroyed all who lived in Ai

Josh. 10:11. Everyone in it (Hazor) they put to the sword. They totally destroyed them, not sparing anything that breathed, and he burned up Hazor itself.

Josh. 10:28. He put the city (Makkedeh) and its king to the sword and totally destroyed everyone in it. He left no survivors.

Josh. 10:40. He left no survivors.

Josh. 11:19. ...not one city made a treaty of peace with the Israelites, who took them all in battle...

Josh. 24:15. But as for me and my household, we will serve the Lord.

Judg. 8:20. As is the man, so is his strength.

Judg. 9:54. Hurriedly, he called to his armour-bearer, "Draw your sword and kill me (Abimelech), so that they can't say, 'A woman killed him."

Judg. 12:5. The Gileadites captured the fords of the Jordan leading to Ephraim, and whenever a survivor of Ephraim said, "Let me cross over," the men of Gilead asked him, "Are you an Ephraimite?" If he replied, "No," they said, "All right, say 'Shibboleth'." If he said, "Sibboleth," because he could not pronounce the word correctly, they seized him and killed him at the fords of the Jordan. Forty-two thousand Ephraimites were killed at that time.

1 Samuel 4:9. Be men, and fight!

1 Samuel 15:3. Now go, attack the Amalekites and totally destroy everything that belongs to them. Do not spare them; put to death men and women, children and infants, cattle and sheep, camels and donkeys....But Saul and the army spared (King) Agag and the best of his sheep and cattle, the fat calves and lambs – everything that was good. These they were unwilling to destroy completely, but everything that was despised and weak they totally destroyed....But Samuel replied: "Does the Lord delight in burnt offerings and sacrifices as much as in obeying the voice of the Lord?...Because you have rejected the word of the Lord, he has rejected you as king."...And Samuel put Agag to death before the Lord at Gilgal.

1 Sam. 27:9. Whenever David attacked an area, he did not leave a man or a woman alive, but took sheep and cattle, donkeys and camels, and clothes.

2 Sam. 7:16. (The Lord directing Nathan what to say to David) But my love will never be taken away from him, as I took it away from Saul, whom I removed before you. Your house and your kingdom shall endure for ever before me, your throne shall be established for ever.

1 Sam. 2:25. If a man sins against another man, God (or the judges) may mediate for him; but if a man sins against the Lord, who will intercede for him?

1 Kings 20:11. One who puts on his armor should not boast like one who takes it off.

1 Kings 22:8. There is still one man through whom we can enquire of the Lord, but I hate him because he never prophesies anything good about me (Ahab, King of Israel), but always bad."

Neh. 1:8. If you are unfaithful, I will scatter you among the nations, but if you return to me and obey my commands, then even if your exiled people are of the farthest horizon, I will gather them from there and bring them to the place I have chosen as a dwelling place for my Name.

Neh. 4:14. Remember the Lord, who is great and awesome, and fight for your brothers, your sons and daughters, your wives and your homes.

Psalm 51:16. You do not delight in sacrifice, or I would bring it; you do not take pleasure in burnt offerings. The sacrifices of God are a broken spirit; a broken and contrite heart, O God, you will not despise.

Psalm 137:1. By the rivers of Babylon we sat and wept when we remembered Zion....O Daughter of Babylon, doomed to destruction, happy is he who repays you for what you have done to us – he who seizes your infants and dashes them against the rocks.

Prov. 3:13. Blessed is the man who finds wisdom, the man who gains understanding, for she is more profitable than silver and yields better returns than gold....

Prov. 14:28. A large population is a king's glory, but without subjects a prince is ruined.

Prov. 16:3. Commit to the Lord whatever you do, and your plans will succeed.

Prov. 20:13. Do not love sleep or you will grow poor; stay awake and you will have food to spare.

Prov. 20:18. Make plans by seeking advice; if you wage war, obtain guidance.

Prov. 24:5. A wise man has great power, and a man of knowledge increases strength; for waging war you need guidance, and for victory many advisers.

Prov. 24:26. An honest answer is like a kiss on the lips.

Prov. 25:17. Seldom set foot in your neighbor's house – too much of you, and he will hate you.

Prov. 25:21. If your enemy is hungry, give him food to eat; if he is thirsty, give him water to drink. In doing this, you will heap burning coals on his head, and the Lord will reward you.

Prov. 27:10. ...do not go to your brother's house...

Prov. 27:17. As iron sharpens iron, so one man sharpens another.

Ecc. 1:1. The words of the Teacher, son of David, king of Jerusalem: "Meaningless! Meaningless!" says the Teacher. "Utterly meaningless! Everything is meaningless."

Ecc. 3:1. There is a time for everything, and a season for every activity under heaven...a time for war and a time for peace.

Ecc. 3:22. So I saw that there is nothing better for a man than to enjoy his work, because that is his lot.

Ecc. 8:15. So I commend the enjoyment of life, because nothing is better for a man under the sun than to eat and drink and be glad.

Ecc. 9:8. Always be clothed in white, and always anoint your head with oil.

Ecc. 9:4. Anyone who is among the living has hope – even a live dog is better off than a dead lion.

Ecc. 9:9. Enjoy life with your wife, whom you love, all the days of this meaningless life that God has given you under the sun – all your meaningless days. For this is your lot in life and in your toilsome labor under the sun. Whatever your hand finds to do, do it with all your might, for in the grave, where you are going, there is neither working nor planning nor knowledge nor wisdom. I have seen something else under the sun: The race is not to the swift or the battle to the strong, nor does food come to the wise or wealth to the brilliant or favor to the learned; but time and chance happen to them all. Moreover, no man knows when his hour will come.

Ecc. 12:13. Now all has been heard; here is the conclusion of the matter: Fear God and keep his commandments, for this is the whole duty of man. For God will bring every deed into judgment, including every hidden thing, whether it is good or evil.

Isa. 6:8. Then I heard the voice of the Lord saying, "Whom shall I send? And who will go for us?" And I said, "Here am I. Send me!" He said, "Go and tell this people: "Be ever hearing, but never understanding; be ever seeing, but never perceiving.' Make the heart of this people calloused; make their ears dull and close their eyes. Otherwise they might see with their eyes, hear with their ears, understand with their hearts, and turn and be healed. Then I said, "For how long, O Lord?" And he answered: "Until the cities lie ruined and without inhabitant, until the heavens are left deserted and the fields ruined and ravaged, until the Lord has sent everyone far away and the land is utterly forsaken. And though a tenth remains in the land, it will be laid waste. But as the terebinth and oak leave stumps when they are cut down, so the holy seed will be the stump in the land."

Isa. 7:9. If you do not stand firm in your faith, you will not stand at all. Again the Lord spoke to Ahaz, "Ask the Lord your God for a sign, whether in the deepest depths or in the highest heights. But Ahaz said, "I will not ask; I will not put the Lord to the test."

Isa. 8:17. I will put my trust in him.

Isa. 9:6. For unto us a child is born, to us a child is given, and the government will be upon his shoulders. And he will be called Wonderful Counsellor, Mighty God, Everlasting Father, Prince of Peace. Of the increase of his government and peace there will be no end. He will reign on David's throne and over his kingdom, establishing and upholding it with justice and righteousness from that time on and forever. The zeal of the Lord Almighty will accomplish this.

Isa. 10:20. The remnant of Israel.

Isa. 11:1. A shoot will come up from the stump of Jesse, from his roots a Branch will bear fruit....

Isa. 11:10. The branch from Jesse.

Isa. 11:11. In that day the Lord will reach out his hand a second time to reclaim the remnant that is left of his people.

Isa. 19:5. (A prophecy about Egypt.) The waters of the river will dry up, and the river bed will be parched and dry. The canals will stink; the streams of Egypt will dwindle and dry up. The reeds and rushes will wither, also the plants along the Nile, at the mouth of the River. Every sown field along the Nile will become parched, will blow away and be no more.

Isa. 24:1. The Lord's devastation of the Earth.

Isa. 56:3. Let no foreigner who has joined himself of the Lord say, "The Lord will surely exclude me from his people".... And foreigners who bind themselves to the Lord to serve him, to love the name of the Lord, and to worship him, and who keep the Sabbath without desecrating it and who hold fast my covenant – these I will bring to my holy mountain and give them joy in my house of prayer. Their burnt offerings will be accepted on my altar; for my house will be called a house of prayer for all nations."

Isa. 65:17. Behold I will create a new heavens and a new earth.... They will build houses and dwell in them; they will plant vineyards and eat their fruit. No longer will they build houses and others live in them, or plant and others eat.

Isa. 66:2. This is the one I esteem: he who is humble and contrite in spirit, and trembles at my word. But whoever sacrifices a bull is like one who kills a man,

and whoever offers a lamb, like one who breaks a dog's neck; whoever makes a grain offering is like one who offers pig's blood, and one whoever burns memorial incense, like one who worships an idol.

Jer. 1:14. From the north disaster will be poured out on all who live in the land.

Jer. 2:7. I brought you into a fertile land to eat its fruit and rich produce. But you came and defiled my land and made my inheritance detestable.

Jer. 3:2. Look up to the barren heights and see. Is there any place where you have not been ravished? By the roadside you sat waiting for lovers, sat like a nomad (an Arab) in the desert. You have defiled the land with your prostitution and wickedness.

Jer. 3:16. "In those days, when your numbers have increased greatly in the land," declares the Lord....At that time they will call Jerusalem The Throne of the Lord, and all nations will gather in Jerusalem to honor the name of the Lord.

Jer. 4:5. Disaster from the north. ...For I am bringing disaster from the north, even terrible destruction. A lion has come out of his lair; a destroyer of nations has set out. He has left his place to lay waste your land. Your towns will be in ruins without inhabitant. The whole land will be ruined, though I will not destroy it utterly. Therefore the Earth will moan and the heavens above grow dark.... All the towns are deserted; no one lives in them.

Jer. 5:4. I thought, "These are only the poor, they are foolish (i.e., morally deficient), for they do not know the way of the Lord, the requirements of their God. So I will go to the leaders and speak to them; surely they know the way of the Lord, the requirements of their God." But with one accord they too had broken off the yoke and torn off the bonds....I supplied all their needs, yet they committed adultery, and thronged to the houses of prostitutes.

Jer. 6:10. To whom can I speak and give warning? Who will listen to me? Their ears are closed so that they cannot hear.

Jer. 8:20. The harvest is past, the summer has ended, and we are not saved.

Jer. 25:31. The tumult will resound to the ends of the Earth, for the land will bring charges against the nations; he will bring judgment on all mankind and put the wicked to the sword....Look! Disaster is spreading from nation to nation; a mighty storm is rising from the ends of the Earth. At that time those slain by the Lord will be everywhere – from one end of the Earth to the other. They will not be mourned or gathered up or buried, but will be like refuse lying on the ground.

Jer. 30:11. ...Though I completely destroy all the nations among which I scatter you, I will not completely destroy you.

Jer. 31:40. The city (Jerusalem) will never again be uprooted or demolished.

Jer. 48:10. A curse on him who is lax in doing the Lord's work! A curse on him who keeps his sword from bloodshed!

Lam. 1:1. How deserted lies the city, once so full of people!

Lam. 4:9. Those killed by the sword are better off than those who die of famine; racked with hunger, they waste away for lack of food from the field.

Ez. 1:4. I looked, and I saw a windstorm coming out of the north – an immense cloud with flashing lightening and surrounded by brilliant light....

Ez. 18:3. The soul who sins will die.

Dan. 7:1. Daniel's dream of four beasts.

Dan. 8:1. Daniel's vision of a ram and goat.

Dan. 12:1 The end times.

Hosea 6:6. For I desire mercy, not sacrifice, and acknowledgment of God rather than burnt offerings.

Mic. 4:1. In the last days...the mountain of the Lord...plowshares/pruning hooks.

Zec. 12:1. An oracle concerning Israel, Jerusalem an immovable rock for all the nations.

#### New Testament

Matt. 4:7 Do not put the Lord your God to the test.

Matt. 5:5. Blessed are the meek, for they will inherit the Earth.

Matt. 5:17. Do not think that I have come to abolish the law of the Prophets; I have not come to abolish them but to fulfill them.

Matt. 5:33. No oaths. Do not swear at all.

Matt. 6:6. When you pray, go into your room, close the door, and pray to your Father, who is unseen.

Matt. 6:9. The Lord's prayer.

Matt. 7:12. In everything, do to others what you would have them do to you, for this sums up the Law and the Prophets.

Matt. 9:13. But go and learn what this means: 'I desire mercy, not sacrifice.'

Matt. 10:34. Do not suppose that I have come to bring peace to the Earth. I did not come to bring peace, but a sword....

Matt. 12:7. I desire mercy, not sacrifice.

Matt. 22:22. Give to Caesar what is Caesar's, and to God what is God's.

Matt. 24:1. Signs of the end of the age.

Mark 12:17. Give to Caesar what is Caesar's, and to God what is God's.

Mark 13:1. Signs of the end of the age.

Luke 6:31. Do to others as you would have them do to you.

Luke 11:23. He who is not with me is against me.

Luke 21:5. Signs of the end of the age.

Luke 20:25. Give to Caesar what is Caesar's, and to God what is God's.

John 10:16. I have other sheep that are not of this sheep pen; I must bring them also.

Rom. 3:10. (Quoting from Psalms, Eccles.) There is no-one righteous, not even one; these is no-one who understands, no-one who seeks God. All have turned away, and have together become worthless; there is no-one who does good, not even one.

Rom. 3:20. Therefore no-one will be declared righteous in his right by obeying the law; rather through the law we become conscious of our sin....For all have sinned, and fall short of the glory of God...a man is justified by faith apart from observing the law.

Rom. 4:2. In fact, Abraham was justified by works, he had something to boast about – but not before God.

Rom. 9:7. It is through Isaac that your offspring will be counted (Psalm 44:22).

Rom. 9:14. I will have mercy on whom I will have mercy, and I will have compassion on whom I have compassion (from Ex. 33:19).

Rom. 9:25. As he says in Hosea, "I will call them 'my people' who are not my people; and I will call her 'my loved one' who is not my loved one," and, "It will happen in the very place where it was said to them, 'You are not my people.' they will be called 'sons of the living God'."

Rom. 9:27. Isaiah cries out concerning Israel: "Though the number of the Israelites be like the sand by the sea, only the remnant will be saved. For the Lord will carry out his sentence on Earth with speed and finality." (from Isaiah 10:22,23)

Rom. 9:30. Because they pursued it not by faith but as if it were by works.

Rom. 10:4. Christ is the end of the law so that there may be righteousness for everyone who believes.

Rom. 10:11. Everyone who calls on the name of the Lord will be saved (from Joel 2:32).

Rom. 12:1 Advice, love.

Rom. 12:19 (Deut. 32:35). "It is mine to avenge; I will repay," says the Lord.

Rom. 12:20. If your enemy is hungry, feed him; if he is thirsty, give him something to drink. In doing this, you will heap burning coals upon his head.

Rom. 13:1. Submission to the authorities: Everyone must submit himself to the governing authorities, for there is no authority except that which God has established.

Rom. 13:9. Love your neighbor as yourself (from Deut. 32:35).

Rom. 14:1. Tolerance of other religions.

1 Cor. 5:13. Expel the wicked from among you.

1 Cor. 6:9. Neither...nor homosexual offenders... will inherit the kingdom of God.

1 Cor. 11:4. Men: uncovered head when praying or prophesying. Women: the opposite. Men: short hair; women: long hair.

1 Cor. 13:1. Love.

1 Cor. 14:34. Women should remain silent in the churches. They are not allowed to speak, but must be in submission, as the law says.

1 Cor. 15:14. And if Christ has not been raised, our preaching is useless and so is your faith.

1 Cor. 15:17. And if Christ has not been raised, your faith is futile; you are still in your sins.

1 Cor. 15:32 (from Isaiah 22:13) Let us eat and drink, for tomorrow we die.

Gal. 4:21. Discusses Hagar and Sarah, Ishmael (see Gen. 21:10).

Eph. 4:26. In your anger do not sin. Do not let the sun go down while you are still angry.

Eph. 6:5. Slaves, obey your earthly masters with respect and fear, and with sincerity of heart, just as you would obey Christ.

Phil. 3:13. Brethren, I count not myself to have apprehended, but this one thing I do, forgetting those things which are behind, and reaching forth unto those things which are before, I press toward the mark....

Col. 3:18. Rules for Christian households. 3:22. Slaves, obey your earthly masters in everything; and do it, not only when their eye is on you and to win their favor, but with sincerity of heart and reverence for the Lord. Whatever you do, work at it with all your heart, as working for the Lord.

Col. 4:1. Masters, provide your slaves with what is right and fair, because you know that you also have a Master in heaven.

1 Thes. 5:2. ...the day of the Lord will come like a thief in the night. While people are saying, "Peace and safety," destruction will come on them suddenly, as labor pains on a pregnant woman, and they will not escape.

1 Thes. 5:20. ...do not treat prophesies with contempt.

2 Thes. 2:1. The man of lawlessness (the day of the Lord).

2 Thes. 3:11. If a man will not work, he shall not eat.

1 Tim. 1:4. nor to devote themselves to myths and endless genealogies.

1 Tim. 2:11. A woman should learn in quietness and full submission. I do not permit a woman to teach or to have authority over a man; she is to be silent.

1 Tim. 5:1. Advice about widows and elders.

1 Tim. 6:1. All who are under the yoke of slavery should consider their masters worthy of full respect, so that God's name and our teaching may not be slandered.

2 Tim. 3:1. Godlessness in the last days

2 Tim. 3:1. But mark this: There will be terrible times in the last days....

2 Tim. 4:7. (Paul writing) ...the time has come for my departure. I have fought the good fight, I have finished the race, I have kept the faith.

Titus 1:15. To the pure, all things are pure; but to those who are corrupted and do not believe, nothing is pure.

Titus 2:9. Teach slaves to be subject to their masters in everything, to try to please them, not to talk back to them, and not to steal from them, but to show that they can be fully trusted, so that in every way they will make the teaching about God our Savior attractive.

Titus 3:9. But avoid foolish controversies and genealogies and arguments and quarrels about the law, because these are unprofitable and useless. Warn a divisive person once, and then warn him a second time. After that, have nothing to do with him.

James 1:19. Everyone should be quick to listen, slow to speak and slow to become angry.

James 2:24. ...a person is justified by what he does and not by faith alone.

1 Peter 2:18. Slaves, submit yourselves to your masters with all respect, not only for those who are good and considerate, but also to those who are harsh.

2 Peter 2:19. ...for a man is a slave to whatever has mastered him.

2 Peter 3:1. The Day of the Lord. 3:6. By water also the world of that time was deluged and destroyed. By the same word the present heavens and Earth are reserved for fire, being kept for the day of judgment and destruction of ungodly men.

James 3:15. Instead, you ought to say, "If it is the Lord's will, we will live and do this or that."

1 Cor. 11:1 about wearing head coverings...prayer and prophecy...men vs. women.

1 Tim. 5:1. Do not rebuke an older man harshly, but exhort him as if he were your father. Treat younger men as brothers, older women as mothers, and younger women as sisters, with absolute purity.

1 Tim. 5:23. Stop drinking only water, and use a little wine because of your stomach and your frequent illnesses.

James 1:5. If any of you lacks wisdom, he should ask God, who gives generously to all without finding fault, and it will be given to him. But when he asks, he must believe and not doubt, because he who doubts is like a wave of the sea, blown and tossed by the wind.

Rev. 9:18. A third of mankind was killed by the three plagues of fire, sword and sulphur that came out of their mouths.

Rev. 11:8. Their bodies will lie in the street of the great city, which is figuratively called Sodom and Egypt.

Rev. 11:18. The time has come ... for destroying those who destroy the Earth.

Rev. 12:7. He was given power to make war against the saints and to conquer them. And he was given authority over every tribe, people, language and nation.

Rev. 13:16. Mark of the beast, number of the beast.

Rev. 17:1 The woman and the beast.

Rev. 17:16. The beast and the ten horns you saw will hate the prostitute. They will bring her to ruin and leave her naked; they will eat her flesh and burn her with fire.

Rev. 17:18. The woman you saw is the great city that rules over the kings of the Earth.

Rev. 18:3 About Babylon. The kings of the Earth committed adultery with her, and the merchants of the Earth grew rich from her excessive luxuries....Therefore in one day her plagues will overtake her: death, mourning and famine. She will be consumed by fire.

Rev. 18:9. When the kings of the Earth who committed adultery with her and shared her luxury see the smoke of her burning, they will weep and mourn over her. Terrified at her torment, they will stand far off and cry, "Woe! Woe, O great city, O Babylon, city of power! In one hour your doom has come!.... In one hour such great wealth has been brought to ruin!

## <u>The Koran</u>

Surah 2:62. Those who believe (in the Qur'an), and those who follow the Jewish (scriptures), and the Christians and the Sabians – Any who believe in Allah and the Last Day and work righteousness, shall have their reward with their Lord; on them shall be no fear, nor shall they grieve.

2:111. And they say, "None shall enter Paradise unless he be a Jew or a Christian." Those are their vain desires. Say, "Produce your proof if you are truthful."

2:112. Nay – whoever submits his whole self to Allah and is a doer of good – he will get his reward with the Lord; on such shall be no fear, nor shall they grieve.

2:140. Or do you say that Abraham, Ishmael, Isaac, Jacob and the Tribes were Jews or Christians? Say: Do ye know better than Allah?

2:141. That was a people that hath passed away. They shall reap the fruit of what they did and ye of what ye do!

2:163. And your God is one God: there is no god but He. Most Gracious, Most Merciful.

2:173. He hath only forbidden you dead meat, and blood, and the flesh of swine, and that on which any other name has been invoked besides that of Allah. But if one is forced by necessity, without willful disobedience, nor transgressing due limits – then he is guiltless. For Allah is Oft-Forgiving, Most Merciful.

2:177. What is expected, for righteousness.

2:178. Remission from the law of equality.

2:184. Can delay fasting if on a journey.

2:185. Ramadan (the month in which the Qur'an was sent down).

2:191. Slay them. Such is the reward of those who suppress faith.

2:219. They ask thee concerning wine and gambling. Say: "In them is great sin, and some profit, for men; but the sin is greater than the profit."

2:256. Let there be no compulsion in religion.

2:286. On no soul doth Allah place a burden greater than it can bear.

3:30. Story of Jesus.

3:84. We make no distinction among the prophets.

3:144. Muhammad is no more than a Messenger: many were the Messengers that passed away before him.

4:157. That they said in boast, "We killed Christ Jesus the son of Mary, the Messenger of Allah" – but they killed him not, nor crucified him, but so it was made to appear to them.

4:171. No Trinity.

5:69. Those who believe in the Qur'an, those who follow the Jewish scriptures, and the Sabians and the Christians – any who believe in Allah and the Last Day and work righteousness – on them shall be no fear, nor shall they grieve.

5:75. Christ, the son of Mary, was no more than a Messenger; many were the Messengers that passed away before him.

6:141. But waste not by excess: for Allah loveth not the wasters.

6:159. As for those who divide their religion and break up into sects, thou hast no part in them in the least. Their affair is with Allah. He will in the end tell them the truth of all that they did.

7:34. To every people is a term appointed: when their term is reached, not an hour can they cause delay, nor an hour can they advance it in anticipation.

7:81. For ye practice your lusts on men in preference to women; ye are indeed a people transgressing beyond bounds.

8:67. It is not fitting for a Prophet that he should have prisoners of war until he hath thoroughly subdued the land. Ye look for the temporal goods of this world; but Allah looketh to the Hereafter; and Allah is Exalted in might, Wise.

9:116. Unto Allah belongeth the dominion of the heaven and the Earth. He giveth life and he taketh it. Except for him ye have no protector nor helper.

15:4. Never did We destroy a population that had not a term decreed and assigned beforehand. Neither can a people anticipate its term, nor delay it.

15:85. We created not the heavens, the Earth, and all between them, but for just ends. And the Hour is surely coming when this will be manifest.

16:3. He has created the heavens and the Earth for just ends.

16:61. If Allah were to punish men for their wrongdoing, he would not leave, on the Earth, a single living creature: but he gives them respite for a stated term.

17:16. When We decide to destroy a population, We first send a definite order to those among them who are given the good things of this life and yet transgress; so that the word is proved true against them: then we destroy them utterly.

21:11. How many were the populations We utterly destroyed because of their iniquities, setting up in their places other populations. Yet, when they felt Our punishment coming, behold, they tried to flee from it.

22:1. O mankind! Fear the Lord! For the convulsion of the Hour of Judgment will be a thing terrible!

22:65. Seest thou not that Allah has made subject to you (men) all that is in the Earth.

24:3. Let no man guilty of adultery or fornication marry any but a woman similarly guilty, or an unbeliever. Nor let any but such a man or an unbeliever marry such a woman.

24:26. Women impure are for men impure; and men impure for women impure; and women of purity are for men of purity; and men of purity are for women of purity.

24:31. Rules for women. And say to the believing women that they should lower their gaze and guard their modesty; that they should not display their beauty and ornaments except what must ordinarily appear thereof; that they should draw their veils over their bosoms and not display their beauty except to their (close relatives, slaves, male servants free of physical needs, and small children).

27:82. And when the Word is fulfilled against them (the unjust), We shall produce from the Earth a Beast to face them: He will speak to them, for that mankind did not believe with assurance in our Signs.

28:59. Nor was thy Lord the one to destroy a population until he had sent to its Center a Messenger, rehearsing to them Our Signs: nor are We going to destroy a population except when its members practice iniquity.

28:68. Thy Lord does create and choose as He pleases; no choice having they in the matter.

29:21. He punishes whom He pleases, and he grants mercy to whom He pleases, and towards Him are ye turned.

30:10. In the long run evil in the extreme will be the end of those who do evil.

33:40. Muhammad is not the father of any of your men, but he is the Messenger of Allah, and the Seal (last) of the Prophets.

33:59. O Prophet! Tell thy wives and daughters and the believing women, that they should cast their outer garments over their persons when abroad: that is most convenient that they should be known as such and not molested.

36:36. Glory to Allah, who created in pairs all things that the Earth produces, as well as their own human kind and other things of which they have no knowledge.

43:61. And Jesus shall be a sign for the coming of the Hour of Judgment.

45:22. Allah created the heavens and the Earth for just ends, and in order that each soul may find the recompense of what it has earned, and none of them be wronged.

49:13. O mankind! We created you from a single pair of a male and a female, and made you into nations and tribes that ye may know each other, not that ye may despise each other.

51:49 (Duality) And of everything we have created pairs: that ye may receive instruction.

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