

Reflections on Progress

"To save the world requires faith and courage: faith in reason and courage to proclaim what reason shows to be true." Bertrand Russell

It would seem that in the beginning there was the land. But there was no land 15 billion years ago when the Universe, according to those who know these things, was a chaotic montage of swirling dust and spiraling nebulae; a cosmic ether expanding outward through nothingness to a destiny that only the physical laws of nature could elaborate. Eventually, however, there was land, for we stand upon it now as our ancestors stood upon it perhaps some 4 million years ago. And to the ancient anthropoids from which we "modern" *Homo sapiens* evolved, the land must have seemed a huge place indeed, at least to those capable of such reflection. Its vastness extended far beyond the horizon, as later human inhabitants would eventually perceive. Early humans, we must surmise, considered their world infinite, not in the abstract sense of mathematics but in an intuitive sense springing from crude perception. The plains sprawled as far as the eye could see. Beyond every rise were new expanses of land, dissected by mighty rivers which seemed endless, emerging from emptiness and flowing eternally into realms beyond the limits of imagination.

As early humans struggled against formidable odds, gathering nuts and berries along with some few precious kernels of primitive awareness, they eventually came to realize that the huge land was bounded. The boundary was water, foul tasting water relentlessly lapping at the land beneath their feet. But this was no ordinary water with land as its boundary. This was extraordinary water that vanished into the sky, awesome water that surged with the wind and went on forever, as if to proclaim itself as the end of the Earth. Humans, in their fear and curiosity, were only to be fooled that it was the end of the Earth for 2 or 3 million more years.

The seas posed no real problem during these years of our early evolutionary escapades. No matter that the earth ended at the water's edge for those of timid constitution, or at the interface between water and sky for those of daring. The land was more than enough. The bounty of the land was so prodigious that its few human inhabitants were overwhelmed.

An unimaginable diversity of wild animals roamed the endless forests and plains. Some were docile, seemingly stupid and easily collected and killed for food. Others were ferocious, cunning and more predatory than humans. Nor were the animals restricted only to the land. The skies were ablaze with winged animals of manifold description. The seas and great inland lakes and rivers teemed with limitless numbers of fascinating aquatic creatures. Plant life abounded in every possible niche that would support it. The beauty of this unspoiled place was provocative and stunning. It was the land primeval.

In the continuous cycle of life, the animals fed on plants and each other. The remains of dead plants and animals provided nourishment for new arrivals. The fledgling human population was an integral, though insignificant, force in this natural dynamic of life. Balance among the plants and animals was maintained by its biological determinants: reproduction and death, habitat, food supply, disease, aggression and natural catastrophe. The human inhabitants of this time seemed unlikely to distort this balance. Their numbers were miniscule. Unlike most other species their offspring were few, infrequent and demanding of considerably long periods of parental care. They seemed defenseless and incapable of competing effectively for their livelihood. It is not

surprising that for hundreds of thousands of years their populations remained quite small. Reasonable speculation suggests that during the first million years of existence the total number of humans was probably considerably less than one hundred thousand.

There were several reasons why the population remained small at this time. Diseases which are easily treated today were often fatal to primitive beings. Infants would not live if they were not robust. The average life span was not long. Hunting and gathering within a reasonable area would not support a large population. Transportation was at the pace of walking and the domestication of large animals was yet to come. Agriculture was non-existent.

While early Australopithecines eked out an existence in the torrid heat of Central Africa, the cradle of humankind, the inexorable forces of organic evolution were collaborating to shape our essential uniqueness. A gradual increase in the size of the human braincase (and therefore the mass of the brain) was accompanied by increasing intelligence. The 400cc skull volume of ancient *Australopithecus aferensis* was dwarfed by the 1000cc skull volume of *Homo erectus*, a species of early human which emerged perhaps 2 million years after *A. aferensis*. The superior intelligence of *Homo erectus* was manifested by his toolmaking capability and his controlled use of fire, capacities which his predecessor lacked. We can only presume that our intellectual development enhanced our ability to survive in an environment where survival was by no means assured. Other species acquired physical means of survival, including reproductive fecundity, protective coloration, claws and fangs, scales, shells and armor of various types and insulating hair coats or fur. Our primary evolutionary acquisition was our expanding mental facility. Early humans, like us, lived predominantly by brain, not brawn. It was because of this that we ultimately came to dominate our environment, rather than being dominated by it. Although fearful of the unknown, our insatiable curiosity, combined with the rewards of overcoming our limitations, served to further our intellectual development and our dominance over the environment in a self-perpetuating fashion. We came to see the world as our world. Our conscious fear was gradually replaced by an unconscious arrogance. We graduated from an existence of subsistence to one of exploitation and conquest. Our most recent evolutionary transition to *Homo sapiens*, some 300,000 years ago essentially represented the dawn of modern man. *H. sapiens* 1400cc brain case is the largest of any primate and is considerably larger than any of our earlier ancestors. This latest intensification of intelligence set the stage for the conquest of that formidable frontier--the great water.

Although early *Homo sapiens* was migratory by necessity--we relied on hunting and gathering rather than agriculture--it is debatable whether this particular lifestyle played any great part in our eventual exploration of the world beyond the sea. Population pressure was probably localized where it did exist, and could be relieved by further migration within the domain of the African and Asian continents. Curiosity was most likely the driving force behind our initial exploration of the seas in search of lands which we intuitively must have known to exist in that great realm of heaving water. The hardships, the uncertainties, the fear--all fell victim to our curiosity. And eventually new lands were discovered: exotic lands; lands of frozen waste, dense jungle, expansive desert; lands with massive mountain ranges, virgin forests and plains; lands with lakes, rivers and streams; and all with an unbelievable wealth of life. It was the land of plenty, and there was no end in sight. Primitive humans lived in uncertainty about many things, but one thing was certain: The land would always provide a living if we were willing to work for it. The elements necessary for life such as pure water, clear air and food could be taken for granted.

Although the fossil record indicates that humans have existed for some 3 1/2 million years, our temporal planetary existence pales to that of other forms of life. Bacteria and other single-celled organisms, which existed long before the evolution of a free oxygen atmosphere, have been dated as far back as 1 billion years. The very earliest forms of primitive life may have emerged perhaps 2 to 3 billion years ago. The Earth itself has been estimated to be about 4.6 billion years old. Thus, the earliest forms of life represent a temporal existence of 40 percent or more of Earth's total life span. Primitive man has existed for less than one-tenth of one percent of Earth's life. Modern man, *Homo sapiens*, has been around for a mere six-thousandths of one percent of Earth's total life span.

So-called civilized man as defined by the emergence of cities and writing appeared in ancient Mesopotamia perhaps 6,000 years ago. This event roughly coincided with the agricultural revolution and the beginning of recorded history. At this time the total human population was somewhere in the vicinity of 20 million. Our ability to grow food now set the stage for commerce in surplus food and goods, and the next great population surge began. But we were really just beginning to explore our world and the world still seemed infinite. Although the rugged Norsemen were crossing the Atlantic Ocean in open boats by the 10th century, the Earth was still believed to be flat by many people. This view was largely dispelled as a result of the intense and far-flung sailing expeditions launched by the Europeans during the 15th and 16th centuries. Nearly all of the world's land masses had been at least crudely mapped by 1700 A.D. So we had conquered the seas and finally determined the extent of the world. While the era of exploration was fading, the age of exploitation was dawning.

The planetary human population at this time stood at roughly 800 million, or less than the present population of China. So, from the time of human inception 3.5 million years ago to the beginning of the industrial revolution, circa 1800, our population did not quite reach 1 billion people. This computes to a population growth rate of 286 people per year over a period of time comprising 99.995 percent of our temporal existence on planet Earth. During the past 185 years, or from the beginning of the industrial revolution to the present our numbers have soared to over 5 billion, or an increase of 3.5 billion in less than two centuries. This computes to a population increase of nearly 19 million individuals per year during a period of time comprising 0.005 percent of our temporal existence on Earth. Of course, population does not increase in an arithmetic or linear fashion as depicted by the above calculations. Rather, population tends to increase exponentially. This means that the human population will increase, not by some fixed number annually, but by an increasingly larger number each year. The actual increase depends upon the existing population size, the fertility rate and the prevailing mortality rate. At the present annual worldwide growth rate of about 2 percent, the human population can be expected to increase by 9.6×10^7 or 96 million people this year. This represents an increase in one year equivalent to the entire present populations of Mexico and Canada combined. At this rate of increase, over the next 10 years, we can expect to be challenged with providing for nearly 1 billion additional human inhabitants, a number produced in a decade which took prehistoric humans millions of years to achieve.

To illustrate the manner in which our population has increased, here is a simple example of a geometric progression: We start with two couples. The four people are each 25 years old. So each has a generation time of approximately 30 years. Each couple has four children. Their children grow up, marry and each have four children. Following in their parents footsteps, these children go on to have four children each. And so on. So our progression forms in this manner:

<u>couples</u>	<u>children</u>	<u>years</u>
2	8	30
4	16	60
8	32	90
16	64	20
32	128	150
64	256	180
128	512	210
256	1024	240
512	2048	270
1024	4096	300
2048	8192	330
4096	16,384	360

It does not take long for our hypothetical couples to overpopulate the earth or several earths. In fact, **in a space of 1,020 years, the four ancestors would have produced 68,719,476,736 descendents** (nearly 70 billion). Of course, this is merely a theoretical example of a geometric progression. In the real world people die, don't reproduce, don't have children in a clockwork manner, four per couple. But they also have up to 65 children by several different wives, have 21 children by one or more husbands, or average eight children per couple. That is why, in the space of 37 years (1950-1987) we have had a doubling of our world population.

So welcome to the 20th century. The great success story of human adaptation to our environment has culminated in our numerical and physical domination of the planet. But the land does not go on forever. And the bounty of the land is not infinite. There are no more great new lands to explore and exploit. We must increase our exploitation of the land upon which we now stand, and we must do so at a rate which boggles the mind. In our quest for supremacy over nature we have lost our innocence. But we have not accepted our responsibility. Instead, we are putting our future as a viable species on very shaky ground.

The first population expansion came about as we developed our hunting and gathering abilities. It took millions of years. The second population expansion came about as we developed agricultural techniques. It took thousands of years. This last, and unbelievably successful population expansion has come about primarily as a result of the development of technologies utilizing oil and other fossil fuels. The oil era, and our utter dependence on it, is expected to last a few hundred years. So we have arrived, but we are not sure of the desirability of our destination. Somehow, we expected to have anti-magnetic devices and domed cities which were clean and healthful, but instead we have nuclear plant disasters and smog-inundated and deteriorating cities.

What is the rationale behind our enormous human population? Primitive people had few means and little necessity for population control. The reproductive instincts of our ancient ancestors served the function of maintaining our fledgling population under conditions where survival was an exceedingly difficult task. Life spans were short, infant mortality was high. Life was fraught with danger from disease, starvation, internecine rivalry, predation and natural cataclysm. Large numbers of children failed to survive to reproductive age. Parents needed to produce large families in order to ensure that there would be at least a few children who lived long enough to provide for them in their old age. And there was strength in numbers, as well as efficiency. Hunting and food gathering were

enhanced by larger families. Tribal defense and raids against competing tribes were more effective as numerical strengths increased. When agriculture replaced hunting and gathering as the predominant mode of existence, the advantages of larger families continued. Individuals working together in large numbers produce and process more crops with greater efficiency than individuals working separately in smaller numbers. With the progression of civilization massive projects such as the building of stone temples, canal digging and railroad building required exceedingly large numbers of laborers. Large scale territorial appropriation, the conquest of competing or wealthy civilizations and the protection of gains that were acquired demanded huge standing armies and a means for continual replacement of losses.

In short, exploration, conquest, production, exploitation and defense required ever-expanding population densities. The need for greater numbers of people continued as the decentralized, agrarian feudal societies gradually evolved into the centralized industrial societies. A cheap and surfeit source of labor power was crucial to the attainment of wealth and political power for the aristocracy. In the modern industrialized world, national and corporate wealth continues to feed on population expansion like a huge, gluttonous beast.

The strength of a nation is measured by growth, the engine of economic vitality. The world seems locked into a vicious, self-perpetuating cycle of ever-increasing production and consumption fostered by population expansion and fueled by resource exploitation. It is no accident that the world's most powerful nations are also the most massive consumers of natural resources. But power is no longer strictly predicated on a large population. The most populous countries in the world today are often the poorest. Still, exploitation, production and consumption remain as hallmarks of wealthy nations. And this wealth is power. The wealthier nations have been able to dominate the rest of the global community, specifically in terms of resource allocation.

The dilemma that humankind faces today resides in our unchecked and institutionalized reproductive behavior. Conditions which in the past justified prolific procreation are no longer extant. We have failed to take adequate inventory of our situation or consider how important Mother Earth is to the condition of our existence. In looking at the human population in the context of the ability of the ecosystem to support our numbers, we find ample evidence that the system is overtaxed. We are being crushed under the sheer weight of our biomass. Intermixed with demands placed upon our natural resources by population pressures, we have economic systems which thrive on continual increases in Gross National Products. Any braking of the national or international economy (lessening of the rate of growth) results in immediate repercussions. If the demands placed on the ecosystem, our natural resources, our institutions and our living space continue to increase--as they surely must, given our present mind-set--we will lose the control over our external environment that we have worked so hard to maintain. We will be at the mercy of forces which have no more regard for humankind than we do for the garden slug.

It does not seem to matter that our numbers are far beyond our needs to guarantee the survival of our species, or that our numbers are actually threatening our survival and the quality of our existence. Our concept of self-importance---embodied in some religious ideologies and encouraged by our ever-successful domination over the environment---is resulting in an insidious insult to an ecological balance which once maximized a splendid diversity of life and natural planetary beauty. Worldwide we are replacing pristine forests with cultivated fields at an alarming rate. The land is becoming a maze of roadways, highways, freeways, railways and runways. Once clear rivers and streams are carrying tons of silt from agricultural tillage and forest clear-cutting. The tremendous load of industrial waste produced each day by rampant productive forces has altered the atmosphere,

the rivers and streams, the oceans. The relentless onslaught of civilization is converting mountains into slag heaps, rolling hills into open pit mines and land everywhere into sprawling complexes of oil refineries, industrial parks and cities whose boundaries are defined only by charter. Each successive environmental intrusion by human beings results in a proportionate loss of habitat to native plant and animal life. The survival of non-human animal species and the quality of their existence has in many cases become moot. They have been driven to extinction or near-extinction. A vigorous struggle by more adaptive species to avoid the same fate continues year by year. Their struggle is futile because we are the ultimate arbiter of their existence. Human population demands preclude their ability to flourish.

Undoubtedly, we fail to appreciate the extent of our dominance and the effect it exerts on the quality of our present and future lives. Imagine the situation if one billion grizzly bears, a number less than one-fifth of the present human population, suddenly appeared on the planet. Pandemonium would reign. The need to do something about the bears would be obvious and urgent. There would be grizzly bears coming in windows in search of food. It is unlikely that anyone would consider this grizzly population reasonable and the problem would not be ignored. Yet the concept of five billion humans existing at densities as high as 600,000 per square mile in some places fails to engender concern.

What is it that we humans are seeking? Certainly our goal is not to saturate the carrying capacity of our planet or decimate its beauty and bounty. Most of us genuinely appreciate our infrequent vacation opportunities to remove ourselves from the madding crowd and enjoy the splendors of nature. One of the favorite archetypes world wide is the heroic man of the hinterland who lived his life as he saw fit, shunning civilization and its influences. But it is becoming more difficult to get away from the crowd since the crowd is more pervasive, and the splendors of nature are being trampled under our feet to provide for the crowd. It is clear that the quality of life deteriorates as the world population strains the ecosystem. Although most of us appreciate an occasional fast-food gourmet treat, we wouldn't particularly care to see the Grand Canyon or the Taj Mahal ringed by burger stands. Excessive population favors quantity over quality. We are so busy maintaining our massive and burgeoning human population and trying to deal with the extensive problems it creates that we have neither the time nor resources to pursue loftier goals.

It is a specious claim that the absolute number of people enjoying an increased standard of living is greater now than ever before, because the percentage of people living at, or below minimal levels of subsistence throughout the world is not declining. Increasing portions of the resource pie are not being allocated to a fixed number of human beings (which would have the effect of enhancing the worldwide standard of living) simply because we do not have a fixed number of human beings. Instead we must distribute more of our dwindling resources to more and more people. Distributing our resources equitably has not been the usual state of human affairs, and it is not likely that increasing the number of people will promote equality. It is rather more likely that more people will have less, as the gap between rich and poor widens.

Tangible gains are very difficult to come by under these circumstances. We have created a climate of perpetual trade-offs where at best, nobody wins and nobody loses. But in the long term we all lose. Solutions by compromise are not solutions. They are deferrals. In so behaving we are mortgaging the future of the human race. By doing essentially nothing to control our population we allow our population to dictate our future. This is so because of one simple fact: Our world is not infinite. Fresh water is limited. Land is limited. Minerals are limited. Oil is limited. Replenishable resources are rate limited. The carrying capacity of the earth is limited. The effects of man's

exploitation are cumulative, however, and will rapidly reach the point of irreversibility if nothing is done. For many of the earth's inhabitants this is already a reality. They have no future. Two billion people don't even have an acceptable present. These people reside in every nation. They don't live only in India or Ethiopia as many of us would like to believe. They live in the United Kingdom, in China and in the United States. They live in New York, in Hong Kong, in Brussels and Iran. They live in Mexico City and Kansas City. They live in the industrialized nations and the Third World nations. They reside in communist countries and democratic countries. They are surplus people and they are treated as such. They are homeless, they are hungry, they are unemployed or under-employed. They are slave laborers or cannon fodder. Any attempt to improve their lot to a meaningful degree unacceptably strains the body economic. So their condition is relegated to that convenient category of necessary evil. Indeed, in the face of the human population onslaught they are at once an inevitable and necessary evil.

But all systems, physical and biological, are self-regulating. The second law of thermodynamics cautions that any system, if left to itself, will assume a state of maximum entropy--a state of maximum randomness and disorder. To prevent this occurrence, energy or direction must be continuously applied. Lacking this input, the system collapses. Thus an infinite population simply cannot be supported by finite resources. If we humans abdicate the throne of our limited command over nature, nature will assume command over us, and in the process we will relinquish our fate to forces blind to our needs and concerns. Although mankind is besieged by problems having little to do with overpopulation, the mere fact of overpopulation renders these problems insoluble. There can be no peace or prosperity in a system undergoing collapse.

We humans provide order to our lives by subdividing the world around us. We sequester ourselves and the facts of our immediate existence in such a way that our lives make sense. We do this from an individual perspective, from the perspective of family and friends and from the perspective of national or ethnic identity. In so doing we isolate ourselves from the whole, from collective reality. We perceive our personal world as a microcosm. If things seem well in our lives, then life must be well. If we throw the switch and electricity flows, then we have ample electricity. If we pull into the service station and fill our tanks with gasoline without having to wait in line, then we must have ample petroleum. If we schedule a two-week vacation to some wilderness paradise, then wilderness is a reality with which we need not concern ourselves. If we are fortunate enough to reside in a country with a respectably high standard of living, then we assume that an equivalent life is possible for all peoples in all nations. And if the conditions of our lives seem to be improving over time, then there is really no reason why they shouldn't continue to do so. But if the conditions of our lives deteriorate, we look toward immediate causes for reasons. If the price of fuel for our cars suddenly doubles, triples or quadruples, we blame OPEC for being greedy. If lumber becomes scarce or unacceptably high priced, we blame conservation groups for restricting timber-interests' access to national forest lands. If our national forests and wilderness areas appear to be disappearing, we blame timber interests for profiteering. To remedy these and countless similar problems, we compromise. But the problems not only persist, they intensify.

Why? Because resource depletion is a direct correlate of both population expansion and standard-of-living improvements. Today a relatively small percentage of the world's population is consuming the lion's share of the world's natural resources. This is relatively common knowledge. What is not common knowledge is the fact that elevating the remainder of humankind to this consumptive level would doom us to a condition approaching extinction. So we can forget about equality unless everyone is willing to accept an equally low standard of living. Besides, productive

gains must be channeled into paying the membership fees, over the next 10 years, of nearly ; 1,000,000,000 new human applicants to the Kingdom of Man.

What are we going to do about this beast in our midst? It is constructive to examine the current manner in which we attempt to resolve our various dilemmas. We have some established world views which dominate most of our thinking. For the sake of argument, those that are setting the course of the civilized world seem presently to be divided into two distinct groups: the Romantics and the Progressives. The Romantics see the world as deteriorating. They grieve over the disappearance of the whooping crane, the condor, the American bison, the Eastern elk, the great blue whale. They lament the decline of the African elephant, the Bengal tiger, the panda, the grizzly bear, the timber wolf. They mourn the diminution of the great hardwood forests, the majestic sequoias, the sagebrush. The Romantics see life as being threatened by industrial smog, nuclear waste, acid rain, parking lots and skyscrapers. They are fearful of computers, automation and centralization. They are saddened by the fragmentation of the extended family. The loss of cultural and ethnic identity pains them. They yearn for the return of the good old days. And they fight back. They move away from the cities and the suburbs. They join conservation groups like Greenpeace, the Sierra Club, the Audubon Society, Friends of the Earth, Ducks Unlimited. And they vote for politicians who support their cause with oratorical eloquence. The more depressed Romantics simply drop out, choosing to raise their families in the dwindling back country without benefit of the accoutrements of civilization. They are proud of their self-reliance.

The Progressives, by contrast, are fearless exponents of the military-industrial complex. Technology is their divine inspiration, economic growth their singular aim. Suburbia and big city life excite them. They are active members of the Chamber of Commerce and the Rotary Club, proponents of big industry and big government and expositors of the World Bank. They see development as a panacea for the future. They vacation in Rio de Janeiro, Miami Beach and Sun Valley. Impediments to progress are ameliorated by re-zoning, sale of Federal lands and off-shore oil leases, large-scale reclamation projects, increases in depreciation allowances, relaxation of state and federal environmental pollution standards. They are modern-day conquistadors, rolling over the land like juggernauts. The Progressives see nations which are not fully industrialized as backward. They see land which is not being mined, logged, tilled or subdivided as being wasted. The Progressives are smart-money people. They hire armies of brokers, money managers, economists and lawyers. Regardless of which way the national or international economy turns, they are properly poised to maximize returns on their investments. Unlike the Romantics, the Progressives see endangered species lists as a perhaps lamentable but necessary consequence of essential economic growth. They know that without growth the economy stagnates and everyone suffers. They realize that oil will disappear in the next few decades, but are heartened by the huge coal reserves that lie in wait. Their abiding faith in technology provides assurance that somehow, some way, a solution to the problem of man's survival will be forthcoming. Nuclear war, as they see it, is the only real threat to humankind. And this they genuinely fear.

There is actually a third, less distinct category which we might designate as Romantic-Progressives. This group combines the idealism of the Romantics with the realism of the Progressives. This third ideological camp represents a synthesis of the views held by the purists of the opposing Romantic/Progressive schools. This group of sophists provide that unquestionably American standard of propriety: balance. They are the moderators of rampant progressivism and fantastic idealism. They are the great compromisers, the preservers of mediocrity under the guise of promise. They are the life-support system of the terminally ill. To preserve our vanishing wildlife

from extinction, they give us zoos and signs along freeways signifying our humanity with the proclamation: Roadside Cover Maintained for Wildlife. By wildlife, they apparently mean moles and dung beetles. To protect our shorelines they vigorously demand that oil companies pay the costs of cleaning up after disastrous supertanker spills. To satisfy contradictory claims to national forest lands by special interest groups, they give us multiple-use legislation and user fees. They see quotas, restrictions, regulations and licenses as solutions to problems produced by population-related environmental stress. They have the hearts of the Romantics and the heads of the Progressives. They genuinely want to improve the lot of all humanity and provide their children with a legacy worthy of inheritance. They have great hindsight but dim foresight. They are a product of the stultifying forces of the zeitgeist. Because of their philosophy of solution-through-compromise, the status quo remains intact--at least to the extent of their influence, which is considerable.

There is a fourth major group of human beings to which no reference has been made and little reference needs to be made. Suffice it to say that this large segment of humanity is comprised of the uneducated, the uninformed, the unconcerned or the uncaring. Although pronouncedly contributing to the problems of humankind, these individuals can offer nothing by way of remedy. By and large they are politically powerless, and are therefore at the mercy of the active socio-economic-political forces which conspire to forge our destiny. Which brings us full-circle to the ultimate concern of humankind.

There is a growing awareness that the adversary relationship between Romantics and Progressives is not working. The resultant compromises are not working. All around the world there are Green parties and environmental associations springing up because it is obvious that we cannot leave our fate in the hands of the dinosaurs that are the Romantics, the Progressives or any combination thereof. As we search for something to replace the past of left and right-wing factions compromising to walk down the middle of the road together, we find that our overriding necessity and common goal must be to maintain the planet which sustains all life. In order to have some influence over what will happen to us in the future, we humans must fully exercise our capacity to reason and we must act on our informed judgments. We must be bold and willing to sacrifice sacred cows rather than innocent lambs. And surely we must debate, arbitrate, mediate and compromise. But most importantly, **we must identify the root causes of our problems, and focus the preponderance of our energies on those root causes.** The human population bomb is indeed a time bomb. It seems innocuous because it is insidious. We don't notice its effects until they are overwhelming, and even then we try to circumvent the issue rather than face it squarely. Because confronting the issue means that we humans no longer have the luxury of unrestrained reproduction. It means that the belief that man is God's best creation must go. It requires recognition of our responsibility to ourselves, our children and all life on planet Earth; not *our* planet Earth, but *the* planet Earth.

At this point, all fluent science fiction readers will bring up a question. Can't we colonize other planets, relieving our population burden? Although space is a new and exciting frontier and it is inevitable that someday we will explore and utilize it, it is not a solution to the population problem. Some day, many thousands of years from now, we may colonize some distant planet or planetary system, but this dream will never materialize if we swallow ourselves whole. We must get our house in order before we have the luxury to dream of a remote future in some far-off galaxy. Space is not just another New World lying in wait for quick exploration, conquest and exploitation. It is a tantalizing and formidable frontier which will require hundreds of years of cooperative and intensive effort on the part of a truly civilized and functional humanity to even begin to penetrate. A world

laboring under the burden of the monstrous and expanding human population can never mature to the challenge. We require a society where every man, woman and child is dear; where the potential of each is fully developed and realized. We need to create a world where we don't simply survive, but thrive. We need to eliminate conditions which promote surplus and superfluous people on a mass scale, effectively reducing them to the real-life status of excess baggage. We need serious and effective population reduction.