

## On Richard Heinberg and *The Party's Over*

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### Summary

I just finished reading Richard Heinberg's book, *The Party's Over* (New Society Publishers, Gabriola Island, BC Canada, <http://www.newsociety.com> 2003). This book provides an excellent description of the energy situation on present-day Earth, and I recommend it to anyone who wants an up-to-date, comprehensive, and easy-to-read assessment. It discusses the dependence of modern industrial society on energy in general and oil in particular, and conjectures what will happen over the next half-century as global oil reserves exhaust. While I do not agree with Heinberg's approach to dealing with the decline of oil, or with his predictions of what the social and political outcomes of this decline will be, his book will likely perform a useful service in making the general public more aware of the nature and imminence of the end of the petroleum age and the industrial age.

In this article I will quote a number of passages from *The Party's Over*. I will comment on some of these passages and, in particular, make some observations on Heinberg's views about where we are headed as global oil reserves deplete. I take no exception to the information that Heinberg presents on estimates of petroleum reserves and production rates, which are consistent with those found in many other sources.

### Passages from *The Party's Over*, and Commentary

There is little that is new in Heinberg's book, for anyone who has been following the energy situation on Earth. The main focus of the book is the message set forth by the geologist M. King Hubbert in 1949, that the petroleum age would be very short, lasting from about 1930 to 2050. Heinberg cites the major other proponents of this view, including geologists / geophysicists Colin J. Campbell, Jean Laherrère, Kenneth S. Deffeyes, L. F. Ivanhoe, and Walter Youngquist. He also provides many references to books and articles by these and other authors who have written on the subject of oil depletion. Although there is little new in Heinberg's book, what is particularly appealing about Heinberg's book is that it is comprehensive (i.e., addresses all major sources of commercial energy), up-to-date, and well written.

Following are some passages from *The Party's Over*.

On the subject of complexity and collapse of societies and civilizations, Heinberg writes, "Many civilizations have expanded their scope and complexity dramatically, only to dissolve back into simpler forms of social organization.

"The literature on the subject is voluminous and includes speculation on the causes of collapse ranging from class conflict to mismanagement. Undoubtedly, the best modern research on this subject was done by archaeologist Joseph Tainter, whose book *The Collapse of Complex Societies* (1988) is now widely recognized as the standard work on the topic. In his book and related essays, Tainter takes an ecological view of society as

an energy-processing structure and concludes that complex societies tend to collapse because *their strategies for energy capture are subject to the law of diminishing returns.*”

Heinberg presents a description of the dependence of Medieval Europe on wood, as both a source of material and energy. See Jeremy Rifkin’s *Entropy* for a more detailed discussion.

“During the 20<sup>th</sup> century, more and more countries adopted mechanized production in the hope of escaping poverty.... Slowly an industrial pyramid emerged. Though its apologists always dangled the promise that eventually the entire world would live at the same standard as people in Europe and America, in fact the pyramid was always growing steeper, with countries at the top growing richer and those at the bottom growing poorer. The same trend of increasing economic inequality was occurring within many countries as well, most notably in the US.”

Heinberg includes a lot of discussion on “Hubbert’s Curve,” which presents a plot of global commercial oil production over time. The curve ramps up steeply from the period 1930-1950, reaches a peak in the period 2000-2010, and ramps down about as fast as it ramped up, ending in about 2050. He quotes L. F. Ivanhoe: “In his summary at the end of that paper, Ivanhoe concludes that the ‘critical date...when global oil demand will exceed the world’s production will fall somewhere between 2000-2010, and may occur very suddenly due to unpredictable political events. This is within the lifetimes of most people now alive. This foreseeable energy crisis will affect everyone on earth.”

As I have noted earlier, Heinberg points out that because of the massive explosion of human population, the global per-capita energy production peaked quite some time ago (1979).

Heinberg includes discussion of alternative energy sources, and concludes, as I have, that none of them (including coal, nuclear, and solar) can possibly replace oil. He points out the fallacy of promoting hydrogen as a “source” of fuel, noting that it is simply a “carrier” of energy and that more energy (from some other energy source) is always required to produce the hydrogen than is obtained from burning it. He notes also that fuel cells are simply catalytic devices for burning fuel – they do not produce energy by themselves.

He quotes Odum and Odum: “Although many energy substitutions and conservation measures are possible, none in sight now have the quantity and quality to substitute for the rich fossil fuels to support the high levels of structure and process of our current civilization.”

“During the past two centuries, we have become accustomed to a regime in which there was more energy available each year, and our population has grown quickly to take advantage of this energy windfall. We have come to rely on an economic system built on the assumption that growth is normal and necessary, and that it can go on forever.”

Heinberg includes a chapter on “A Banquet of Consequences” (from a quote by Robert Louis Stevenson, “Sooner or later, we sit down to a banquet of consequences.”). In this chapter Heinberg describes the dependence of all aspects of industrial civilization on energy, and he describes how the industrial systems will collapse as the oil runs out. In turn, he discusses the economy; transportation; food and agriculture; heating and

cooling; the environment; public health; information storage, processing, and transmission; and national politics and social movements. Some quotes follow.

“Modern industrial agriculture has become energy-intensive in every respect... Traditional forms of agriculture produced a small solar-energy surplus: each pound of food contained somewhat more stored energy from sunlight than humans, often with the help of animals, had to expend in growing it. That meagre margin was what sustained life. Today, from farm to plate, depending on the degree to which it has been processed, a typical food item may embody input energy between four and several hundred times its food energy. This energy can only be maintained because of the availability of cheap fossil fuels, a temporary gift from the Earth’s geologic past.”

“The ecological effects of fossil-based food production have been catastrophic, particularly with respect to agriculture. Farmers now tend to treat soil as an inert medium with which to prop up plants while force-feeding them chemical nutrients. As a result, the complex ecology of the living soil is being destroyed, leading to increased wind and water erosion. For every bushel of corn produced in Iowa, three bushels of topsoil are lost forever.”

“The implementation of the most intelligent strategies for dealing with the petroleum extraction peak – such as diverting the remaining energy resources toward conservation and transition efforts – will require political will. But politicians are seldom inclined to deal with problems proactively, and will be unlikely to act decisively until crisis has arrived full-blown.”

“Because they have no solution, politicians on both sides [the Right and the Left] will probably go to absurd lengths to obscure or mystify the real causes of the changes engulfing society.” This was demonstrated very clearly in the September 11 attack on the World Trade Center complex. It was obvious that America’s open-border and mass immigration policies would make it easily vulnerable to such attacks, and that the many enemies of our materialistic lifestyle would attack, yet the US Government claimed that the attack could not be foreseen. And virtually everyone in America agreed. This is not surprising, since most Americans no longer care to protect their heritage or way of life. As a whole, they are in favor of more immigration, open borders, and the diverse, multiethnic / multicultural population that encouraged and enabled the attack.

It was obvious, even to a layman, that the World Trade Centers would collapse after being hit by the aircraft, yet the New York Fire Department sent its men into them. Afterward, when the Towers collapsed, killing hundreds of firefighters, the leaders claimed that no one could have possibly foreseen this event. The collapse was obvious to laymen, and certainly to professionals. The city leaders either knew, or they were incredibly ignorant of what they should have known to do their jobs. Yet they claimed that “no one could have possibly foreseen” what would happen. And the most amazing thing is that no one took them to task on this issue. They were either aware and did nothing, or they were not aware and should have been. And they sent hundreds of firefighters to unnecessary deaths. In either case, they should have been castigated for their malfeasance. They were not. Instead, they, as well as the nation’s leaders and citizens whose immigration and open-borders policies led directly to the attacks, were commiserated and lauded.

“The alternative – telling the public the awful truth that the era of cheap energy and industrial growth is over – may be politically unpalatable, but in the long run it is the only morally defensible course of action: *the sooner the general public understands the situation industrial societies are in, the less suffering will occur as we make the inevitable but painful transition to a new energy regime.* Here, Heinberg is off the mark. The general public has known for decades that we are destroying the biosphere, and that oil will eventually run out. They do not want to hear this or to deal with it. There is no way that the public will ever agree to a decreasing standard of living, no matter what the consequences to other nations or to other species or to future generations of human beings or other creatures. As President George W. Bush has declared, “The American standard of living is not negotiable.” Today’s society will knowingly and wilfully agree to the complete impoverishment or extinction of all future human generations, simply to maintain its standard of living for a little while longer. It will knowingly and wilfully agree to the complete destruction of the biosphere, with the extinction of millions of other species, simply to continue its obscenely lavish lifestyle for a few years longer. Garrett Hardin referred to this behaviour as “discounting in time and space.” The energy consumption of Americans and Europeans continues to increase, while millions more die from hunger and disease. This situation will not change – ever.

Heinberg observes that the next generation of human beings, who see their planet destroyed, may well take vengeance on the older generation that caused this to happen. “But if growing public dissatisfaction arising from the shrinking of the resource base is denied coherent expression through a leftist alternative, it will seek some other outlet. It could, for example, be expressed through increased intergenerational conflict. Even if not explicitly told that this is the case, young people will likely intuitively understand that, within the lifetime of the baby-boomer generation, over half of the total petroleum reserves of the planet were used up. Everywhere they will see evidence of the extravagant party their elders have thrown, while for themselves there will be only dregs left over. With ever fewer economic opportunities available, they may feel an unspeakable resentment toward older people who have frittered away the world’s endowment of natural resources, leaving almost nothing for their children and grandchildren. If rightist forces are powerful enough to prevent this rage from being channelled into an organized leftist movement, young people may vent their anger through random acts of sabotage, which will only provoke and justify increased repression.”

Here, Heinberg is right on the mark. The current generation of human beings is raping the biosphere and destroying the planet’s biodiversity for all future time. It is making 30,000 more species extinct every year. It is committing a spectacular genocide in an instant of geologic time, and solely the result of large human numbers and industrial activity. As the Koran says, however, “those who destroy the Earth will be destroyed.” When fossil fuel production starts to decline in a few years, it will become patently obvious how the current generation of human beings not only squandered these precious resources, but also caused the destruction of the biosphere in doing so. The six billion human beings alive today on the planet are destroying the quality of life for all future generations of humanity and all other species on the planet. They stand guilty as charged. Whoever takes charge of what remains of the planet after their time has ended will feel little guilt in taking whatever actions are required to stop further destruction at their hands.

It may be argued that it is the planet's leaders (economic, political, religious, social) that wilfully caused the destruction of the biosphere, and that most people are either too ignorant or too incapable of doing anything to address the situation. It may also be argued that it is mainly the industrialized nations that are consuming the world's petroleum reserves and therefore are mainly to blame. But almost all people on the planet today are pleading for more industrial development and production. It is just a handful of scientists, environmentalists, philosophers and spiritualists who are warning of the danger. And of those, almost none are willing to take effective action to stop further destruction.

Today's political leaders want peace at any cost. And this places them between a rock and a hard place. If they try to reduce the population to manageable levels by peaceful means, the dependency ratio will skyrocket, causing extreme intergenerational rancor. If they do nothing, as is presently the case, they will be taken to task when economic and social collapse begins, as global oil production falls. In either case, they will lose. As global petroleum production falls, however, peace will no longer be an option. At some point, it is global war (or other global catastrophe caused by global industrialization) that will shape the future of the planet. It is peace, along with uncontrolled industrial development and activity, that has destroyed the planet's biosphere and resulted in a global human population of over six billion. There is now no way of peacefully reducing the human population to ecologically supportable numbers, either before oil production falls or before the biosphere's biodiversity is decimated. War will happen, and it will be catastrophic. Today's world leaders, who have destroyed the biosphere, will not have to make the hard decisions that I referred to above. They will be destroyed, along with the six billion people who willingly followed them, in global catastrophe caused by their own hands.

The final section of the "Banquet of Consequences" chapter is entitled, "The Geopolitics of Energy-Resource Competition." In that section, Heinberg discusses likely political developments resulting from oil exhaustion. "Civil wars will be likely to erupt in the less-industrialized nations that have abundant, valuable, and accessible resources, such as oil, natural gas, and diamonds, rather than in those that are resource-poor. This conclusion is based on a correlation study by Indra de Soysa of the University of Boston of the value of natural resources in 139 countries and the frequency of civil wars since 1990. The finding runs counter to the long-held assumption that internecine warfare is most likely to occur in resource-poor countries.... Pity the nation with resources remaining."

Heinberg's final chapter is entitled, "Managing the Collapse: Strategies and Recommendations." He begins: "If collapse cannot be avoided altogether, the best alternative is clearly a *managed collapse*, in which society would undertake a deliberate, systematic process of simplifying its structures and reducing its reliance on non-renewable energy sources. (Again: I am using the term collapse here in the technical sense in which Tainter employs it, namely to refer to any substantial reduction in social complexity, and not necessarily to the complete, sudden, chaotic disintegration of all institutions.)"

"There is already an extensive literature of recommendations along these lines – although some of it seriously understates the political and economic challenges inherent in the project of deliberately shrinking the material throughput of a social system designed on the assumption that resource availability will continually grow.

“One of the better recent texts in this regard is *Beyond the Limits: Confronting Global Collapse, Envisioning a Sustainable Future*, by Donella Meadows, Dennis Meadows, and Jørgen Randers (1992). In it, the authors present the updated results of their computer model World3 which, in the early 1970s, modelled future outcomes from trends in population and resource use, producing projections of industrial collapse in the mid-21<sup>st</sup> century (this initial work was reported in 1972 in the best-selling book, *The Limits to Growth*). When Meadows *et al.* refined the program and fed in new data twenty years later, they again found that ‘the model system, and by implication the ‘real world’ system, has a strong tendency to overshoot and collapse. In fact, in the thousands of model runs we have tried over the years, overshoot and collapse has been by far the most frequent outcome.”

“In spite of this, the authors believe that a ‘sustainable society’ is still technically and economically possible.”

It is rather amazing that, after presenting all of the arguments showing that overshoot has occurred, and citing all of the evidence that the ensuing collapse will in fact be catastrophic, Heinberg goes right along with all of the others who continue to assert that the decline of the petroleum age and industrial society will *not* be catastrophic.

While Heinberg cites *The Limits to Growth*, he does not bother to mention that the methodology used in this work is the *system dynamics* methodology developed by MIT Professor Jay Forrester. This seems a little strange, in view of the fact that he went to great lengths to emphasize M. King Hubbert’s technical credentials (geologist) and list dozens of other people (geologists, geophysicists, writers) who agreed with his methodology for projecting the duration of the petroleum age. If it was so important to show the breadth and depth of the scientific basis for Hubbert’s projection that global oil reserves would not last for more than 100 years, is it not equally important to discuss the basis for the models that project what will happen as those resources exhaust?

In his book, Heinberg never discusses catastrophe theory (à la René Thom). This, too is odd. He mentions that *The Limits to Growth* authors have demonstrated that for most computer simulation models of dynamic systems, overshoot and collapse is far and away the most likely outcome. This is consistent with catastrophe theory, which shows that dynamic systems almost always fail catastrophically. Heinberg cites William Catton’s observation that populations that gain access to an unexpected windfall of resources invariably “overshoot and collapse” – they do not decline peacefully and slowly to their pre-windfall levels. It is very evident that Heinberg is in a state of denial concerning the future of industrial society. He endorses the prediction that after global oil reserves exhaust, the global human population will fall gradually back to the level just prior to the petroleum age, i.e., to two billion. But why would this happen? The planet’s resources will have been destroyed. The soil will have been destroyed. The ocean habitats will have been severely damaged. The atmosphere will have been polluted by greenhouse gasses. The ecology of the biosphere will have been severely and irreparably damaged. The forests will be gone. When populations overshoot and collapse, they never simply go back to their early levels. It is obvious why this is so – they have consumed the resources that made their overshoot possible. This is true both for biological and human populations, cf. Easter Island, St. Matthew’s (Reindeer) Island, Rome, all ancient civilizations and societies that overshot their carrying capacities.

When industrial society collapses, it will be a catastrophic collapse. There is no doubt of this. There are many reasons. First, catastrophic collapse is what is invariably observed in natural populations and in human populations that overshoot their carrying capacity. (So far, human population is behaving exactly as all other natural populations, in proliferating prodigiously to the limit allowed by the energy windfall of fossil fuel.) Second, the major thesis of catastrophe theory is that dynamic systems almost always fail catastrophically. Third, catastrophic collapse (overshoot and collapse) is the most common result in system dynamics modelling. Fourth, the human-population overshoot began from a global population of about 200 million (ca. 1600 when mankind began to use coal on a large scale), not two billion (ca. 1900, when mankind began to use oil on a large scale). When it collapses, it will fall to far below 200 million, not to about two billion. Fifth, it is the intention of *The Omega Project* to convince the leaders of the post-industrial world that a long-term-sustainable population for Earth is on the order of ten million people, and to convince them to work toward that end.

The final chapter, "Managing the Collapse," ends with a discussion of strategies that might be considered at the individual, community, national, and world levels, to cope with the coming decline in global oil production. Heinberg's recommendations – to conserve and be more efficient in our use of energy – are useless. In the long run, that will not change anything. As I have noted, the world will run out of oil at about the same time, regardless of what conservation measures are taken. And it doesn't even matter if the estimates of global reserves are off by a significant amount (Heinberg also notes this). The fact that global energy consumption is increasing every year means that the end will come soon and about the same time, no matter what conservation measures are adopted. Conservation will not stop the destruction of the biosphere by six billion people, all bent on industrializing and increasing their standards of living as much as possible with no regard for nature or even for future generations of their own species.

Heinberg writes: "A cursory scanning of population / resource data would suggest that virtually every nation on Earth has overshoot its carrying capacity. This being the case, what should be the target size of national populations? The answer obviously varies from country to country. Globally, according to Hopfenberg and Pimentel, 'if all people are to be fed adequately and equitably, we must have a gradual transition to a global population of 2 billion. A population policy ensuring that each couple produces an average of only 1.5 children would be necessary. If this were implemented, more than 100 years would be required to make the adjustment.'"

Such statements are of no value whatsoever. The UN and World Bank project that, even if the so-called "demographic transition" takes place and birth rates mysteriously fall to less-than-replacement levels immediately, the world population will still soar to nine billion, simply because of population "momentum" (the tendency of populations to increase even when birth rates fall to below-replacement levels, because of the fact that many people have not yet had a chance to breed). The only people who have below-replacement birth rates are those who live in fabulously wealthy countries, i.e., those countries with extremely high energy consumption per capita. And it is those fabulously wealthy countries that are causing the most damage to the biosphere. People in poor countries do not want 1.5 children per couple. And most of the world consists of poor countries and will continue to consist of poor countries.

Heinberg observes that agencies already exist for addressing global problems. "They are generally of three kinds: first, corporations, trade bodies, and lending institutions;

second, the quasi-governmental apparatus of the UN, with its related aid agencies; and third, the small but vocal cadre of transitional human rights and environmental NGOs.”

“The corporations, international banks, and trade bodies together constitute a force for globalization-from-above. They are doing almost nothing to help, and much to hinder, an orderly global energy transition. This should be no surprise: they are part and parcel of the growth economy that flows from the fossil-fuel pipeline”

“The forces of globalization-from-below (the NGOs) do not have a full picture of the degree to which world events revolve around energy resources and their depletion; nor do they have an adequate strategy for dealing with the issues they are confronting. But their push toward decentralization, democratization, and cooperation is nevertheless generally the right way to help humanity wean itself as painlessly as possible from fuel-fed industrialization. Thus what is needed globally is a weakening of the forces of globalization-from-above and a strengthening of those of globalization-from-below.”

“The UN – which is caught somewhere between these two sets of forces – is one of the few institutions that is in any position to provide enforceable minimum global environmental standards and to serve as an arena for conflict resolution.”

“If all parties concerned understood the severity of the crisis facing them, there is much that they could do.... The majority of the world’s nations and peoples would probably be willing to participate in all of these difficult and even painful efforts if they were informed clearly of the alternatives.” This is total nonsense. The leaders of the world know exactly what they are doing – destroying the biosphere. Environmentalists have been screaming about this for decades. The leaders of the world, and most of the people in the world, do not care about other species and they do not care about the welfare or existence of future generations of mankind. That is the “discounting in time and space” that Garrett Hardin wrote about. All that the world’s current leaders want is increased material wealth for themselves and their associates and perhaps their nation, no matter what the cost to the environment, to other species, to other nations, or to future generations.

I commented earlier that, despite the overwhelming evidence that overshoot is in the advanced stages and collapse will be catastrophic, Heinberg refuses to accept that there is not some way for the collapse to be “graceful.” Heinberg asks, “Is it too late? Are recommendations for a peaceful energy transition hopelessly unrealistic?”

“In some respects, it *is* too late. As noted above, the transition could have been made much more easily if we had started 30 years ago, and with a World War II-level of effort. Every few years since the oil crisis of 1973, another book has been published that says, in essence, ‘We have little time left; we must start *now* to change direction before it is too late.’ At the Earth Summit in Rio de Janeiro in 1992, several eminent speakers agreed that the global community had the decade of the ‘90s in which to turn from growth and consumption toward sustainability. The turn was not made in that decade. Indeed, the treadmill of consumption only accelerated. At what point does the clock run out? Is there a time when we’ll have to say, ‘We had our chance and we blew it’?”

“If by ‘Is it too late?’ we mean ‘Is it too late to make the transition painlessly?’, then the answer may well be yes. By now, we almost certainly face a ‘discontinuity,’ as



renewable-energy expert Ron Swenson euphemistically put it in a recent phone conversation with me.”

Heinberg is not alone. Writer after writer has presented a strong case that the human species has overshoot its carrying capacity. But they invariably argue that there are ways to avoid the collapse, despite all of the warning signs, evidence, and environmental destruction. The collapse is inevitable “unless we do something right away.” It does not matter, they argue, that large human numbers and industrial activity have destroyed a million species, much of the world’s topsoil, most of its natural-growth forests, many of its rivers and lakes and swamps, and its major fisheries, and polluted the land, oceans and atmosphere to an incredible degree. Somehow, things will work out. Somehow, we will find a solution.

Well, we will find a solution, but as a writer (was it Einstein) once noted, the way of thinking that got us into this mess will not get us out of it. As noted by an increasing number of writers, the solution will be solved by spiritual means, not by the same political, economic, technical, and religious means that created the problem in the first place.

As Heinberg conjectures, it is too late for a painless solution. It is indeed too late even for a peaceful solution. The world is in an advanced “overshoot” condition, and the collapse will be catastrophic. The forces that advocate more industrial development and activity (e.g., economists, politicians, businessmen) are very powerful, and will not for an instant draw back from their commitment to increased economic growth and improved material standards of living for all human beings. But they cannot prevent the inevitable collapse of the industrial world, since they cannot find an alternative energy source to support it when oil is gone. The only issue that remains, over which there will be any control, is what to do after the catastrophic collapse of the industrial world occurs.

Heinberg closes with “A Final Word.” “Explanations for social problems usually carry moral implications, and the explanation offered in this book is no exception. We like to think that our human intelligence and our moral codes set us apart from other organisms. When other creatures gain an energy subsidy, they instinctively react by proliferating: their population goes through the well-studied stages of bloom, overshoot, and die-off. If we humans are more than mere animals, we should be expected to behave differently. Yet so far we have reacted to the energy subsidy of fossil fuels exactly the way rats, fruit flies, or bacteria respond to an abundant new food source. A hard look at the evidence tends to make one sceptical of human claims of specialness, causing one, almost inevitably, to view more sympathetically the choice our species has made to become socially dependent on non-renewable fuels.”

Heinberg offers no insight on how to solve the world’s environmental crisis. He continues to envision a world containing a massive population of two billion people. He continues to envision a world of multiple nations, all engaged in industrial activity. As I have written before, as long as there is more than a single nation in the world, those nations will be committed to industrial development and growth and war. The only planetary management paradigm that will work in the long term (to preserve the biosphere and the human species) is a single planetary management organization in charge of a very small human population. That is the only way toward a planet in which mankind lives in harmony with nature and itself. That is the only way toward a world of peace and sanity. *The Omega Project* is working toward a day when a synarchic world

government will manage a minimal-regret population of ten million people. That is a solution to the world's current crisis. It is the *only* candidate solution presently "on the table" that assures a complete halt to the destruction of the biosphere, a complete halt to the mass species extinction, and the opportunity for all human beings on the planet to exercise a very high level of freedom and to develop spiritually.

There are many who will resist the move to a single planetary management organization of a minimal-regret population. They are the leaders of the world's nations. They are the leaders of the world's corporations. They are the world's economists. They may include leaders of some of the world's religions, some of whom are opposed to the implementation of a single world government. Who, then, is in favor of rational planetary management, of a world of peace and sanity? It is those who place harmony with man and nature above materialism, who seek spiritualism over material possessions. It is those who would free mankind from the bonds of economic slavery. They are the world's environmentalists, its spiritualists, its "New Agers." It includes those who are concerned about the "rights" of all life in all times, not just about our own species in our own time. But while these people may seek the goal of a world of peace and an intact biosphere, the accomplishment of that goal will not occur without commitment, sacrifice and struggle. The goal is a world without war, in the sense of destructive conflict between nations. The world will never be free of war, however, in the sense of conflict between those who would destroy the world by large human numbers and industrial activity and those who would have a world in which human beings live in harmony with nature. The battle between the forces of materialism and the forces of spiritualism will not end. It is the eternal battle between good and evil.