

Waste not, Want not

"The ruined wood we used to know won't cry for retribution--the men who have destroyed it will accomplish its revenge" William Faulkner

Though the primary focus of this book is on the benefits of reducing our human population to the point that we are in harmony with our surroundings, it is undeniable that population reduction by itself will not do the job. Rational population reduction policies will have to be accompanied by more efficient and more equitable resource use. The manner in which we in the United States use resources will have to change, if we are to continue to have any "lifestyle" at all. The rest of the world will also have to conserve, but the effort should be most concentrated in the United States because we are notoriously wasteful. Most of us are not aware of our inefficient energy use, assuming instead that as a fully industrialized nation we are superior in efficiency to less industrialized countries. It is sobering to realize that current resource management in the United States is often extremely inefficient, though backed by the seeming magic of our technology. The United States, with 5 percent of the world's population, consumes one-third of the world's resources, with per capita energy consumption double that of most European countries. (64) The technological superstructure of our current resource use often camouflages the fact that we are complicating processes which were operating quite efficiently for thousands of years, specifically in agricultural practices. The impediment to realizing a secure future is rooted in the fact that our present economic system works only as long as we have large amounts of readily available resources to support it. Trends indicate that we are on the horizon of an age which will not allow us to be so cavalier about our energy use. Consider these facts:

** U.S. oil production peaked in 1970, and the amount of oil we can get out of the ground has been going down steadily ever since.

** 90 percent of the oil which can be extracted from U.S. land and off-shore areas will have been extracted by the year 2000.

** Without oil, the U.S. would be able to produce only one-fourth as much food. (65)

Safe, efficient and non-polluting energy becomes more of a necessity every day, but it has not become more of a priority every day. The lack of logic in our national and world energy use is a criminal act which is beginning to exact a harsh price. For years there has been talk of establishing a national energy policy in the United States, due to the rude awakening of the 1970s and early 1980s that we could be held hostage to our excessive energy use. There has been talk, but no action. The OPEC nations were able to raise oil prices, unwittingly precipitating rapid and comprehensive conservation in many nations. Smaller, less wasteful automobiles took over the lion's share of the car market. Due to the high prices traditionally paid for fuel, the Japanese and West Germans have been developing and improving such cars for years, and thus their economies boomed as more efficient cars were imported by the United States. United States car manufacturers scurried to catch up with their competitors, but as soon as the pressure eased and oil seemed plentiful again, U.S. manufacturers returned to producing large cars and protesting fuel efficiency standards.

In terms of environmental damage, there is no distinction between private enterprise and public enterprise. When Lee Iacocca makes a decision about producing larger cars for their larger profit potential, he is deciding the future for you and your children. Such cars will use more resources and cause more pollution, which will not be left up to Chrysler corporation or Mr. Iacocca to rectify. This example of our short term view of energy usage is indicative of the present policy in the United States concerning energy use in general---if there isn't an easily perceivable crisis then there is no need to conserve. If we have plenty of oil right now, then there is no need to conserve oil. If we have plenty of water right now, then there is no need for microirrigation or water use restrictions. If we have trees for forest products right now, then deforestation is not a problem. This is not necessarily the way we think, but it is certainly the way we operate. **Because we do not have any traditions that stress conservation in the mainstream of our lives, conservation is considered the preserve of a fringe element of people who just happen to be interested in it---a sort of hobby, like stamp collecting or ballroom dancing.**

To examine our energy use we must examine the criterion that supports it. Our industrial economy has developed around an erroneous premise. We assume that business will always continue as it has for the past few hundred years. Economic thought singularly avoids issues of morality, values and exploitation. Morality is summed up in the statement that "business is business." The values of the marketplace are based on supply and demand, leaving out the hidden costs of doing business, such as wear and tear on an environment which does not belong to any single corporation or conglomerate of corporations. The most curious part of this economic philosophy is that it is assumed to be in the best interests of all, due to the propaganda generated by those who benefit most from it. This self-serving philosophy is maintained by taking a few examples of "self-made" citizens who went from poverty to wealth, and trumpeting their stories to show that if one works hard, is self-sacrificing, daring and prudent all at the same time, one may triumph by having the use of more of the resources than one's peers.

Unequal distribution of wealth is built into the present system. Wealth is mainly inherited, and there is no debating that a very small percentage of people (5 percent or less) control an astounding amount of wealth (90 percent or more). In the United States, more than one-third of the nation's wealth is now held by just 1 percent of the population. It is difficult to believe that these people were smarter or worked harder than those who did not achieve great wealth. Even if this were true, it is a poor criterion which allows some to live in luxury while others-- most often single women with children, the handicapped, the mentally disadvantaged and the elderly are forced to live in poverty. The benefits for the masses of such concentrated wealth are tentative, at best. Voluntary charity on the part of wealthy people is an infinitesimal part of the amount of wealth they have amassed, and such fortunes are often based on activities which are environmentally unsound.

Our ability to control fire for various uses was probably the first indication behind our rationale that, unlike other animals, we would not be bound by the harshness of our surroundings. It was one of the links in the chain that made it possible for us to begin to believe that we could eventually conquer the elements. We became arrogant through our ability to make ourselves comfortable in environments which were inhospitable. We did not need the advantages that other species had because we had the great advantage of our mental powers. We have been unable for some time to believe that there was anything we could not do, could not manufacture or could not improve upon.

This belief is amazing in such a relative newcomer as ourselves. The dinosaurs reigned for 130 million years, albeit with tiny brains. Other organisms have been living in cooperation with the environment for billions of years. We humans, with our great intelligence, have managed to

restructure our environment to the point of collapse in the equivalent of a geological moment. "Private" profits are made by disregarding the damage to the ecosystem, a cost which we all must bear, though not all of us share equally in the profits. This disregard of environmental deterioration, wrought in search of the elusive profit margin, amounts to a subsidy to the wealthy which is not returned in any fashion when the bill to restore the environment comes due. Corporations are forced by law to clean up a portion of the damage (generally after years of court battles which they are well equipped to win) or compelled to negotiate a lenient settlement. We have come to believe that our human lives and our human business is all-important. Our unique ability to use our brains is considered the most clever accomplishment possible, and so each manifestation of this accomplishment has gone essentially unchallenged. Making profits has been the primary goal of our industrial age, and so we lionize those who can reap the greatest profits. But we are, in essence, renting space on this planet, and "ownership" is merely a legal division of that space. We don't "own" the air, the water or the land any more than other species do. We are willing to "share" with other species, as long as those species fit into our arbitrary plan which assigns their value according to their importance to us. Our outlook is anthropocentric, forcing everything into a scheme that stresses the human elements of our perception. Animals and all of nature are seen as doing things as we do. They are rewarded in our eyes for their likeness to us, or scorned for being "inhumane." The flaw in this scheme is that we have not become sufficiently aware of the complex and mutually beneficial relationships between other species and ourselves. The time has come when we must radically change our thinking about our importance. We have passed the point where our arrogance is a beneficial evolutionary characteristic. Our human "competition" for resources is not a game which can be won, other than temporarily.

The resources we have are certainly not of our creation. We manipulate them in various different ways to make products, but we do not "create" any earth, metals, oil, crops or other raw materials. We merely apply energy to matter to change the form of that matter to something which we find more useful. Our thinking about resources is linear--the resource is transformed into a product which eventually outlives its usefulness and is discarded. Natural systems, however, are circular. To oversimplify, the activity of microorganisms promotes fertility of the earth. This fertility helps to bring forth plants, which are transformed into energy by animals, which in turn fertilize the earth, feeding the microorganisms. Our economic thinking is similarly linear, rather than circular. It assumes that we can continually feed resources into production, making products which we can continually discard. It assumes that we will never have to confront the physical impossibility of environmental limitations. We choose to deny these limitations in order that we may believe that such an economic system will continue forever.

One aspect of our denial is the refusal to acknowledge that these resources are the domain of all species. Our world view holds that everything is here for human consumption. Already one-half of the biosphere's net primary productivity is diverted to human uses. (66) Another aspect of this denial is our reliance on linear systems which leave out the most important source of continuity in resource utilization--that of returning energy to the original source. We live by continually drawing more from our bank account and depositing less and less. The least competent accountant can readily find the flaw in this plan, but we refuse to confront either our economic or environmental deficits, though the former is totally dependent on the latter.

The benefits of the Industrial Revolution were realized because of resource abundance. We owned the key to the candy store. It did not matter if there was rampant waste because there was no obvious reckoning in the very near future to make us examine our behavior. We have taken for

granted that using extremely large expenditures of energy for the simplest tasks is of little consequence. For example, most of us in the industrialized nations have the power of 60-200 horses to drive us to the store to get a newspaper or a loaf of bread. We do not consider the amount of energy which has already been expended to grow the wheat for the loaf of bread, package it attractively and transport it to us. It is unimaginable that our ancestors would have harnessed a hundred horses to travel to town for their supplies, yet we do it everyday. We unthinkingly squander energy in many ways. The growth of urban areas throughout the world can only take place by using resources which must be transported from outside areas, often over thousands of miles. The centralized urban area benefits temporarily, but the overall energy usage is eventually detrimental to the society as a whole. Eventually the costs become intolerable. Our cities become bloated, decaying monsters which defy attempts at efficiency.

With our mechanical servants, we live much better than the royalty of legend. We have the equivalent of thousands of slaves to do our bidding. Some of the advocates of our present society see this as admirable. They are fond of saying "You cannot stop progress." But progress, like beauty, is in the eye of the beholder. Conservationists of the past warned of the consequences of our reckless disregard for nature, but it has been standard operating procedure for the economic powers of the time to laugh these warnings off as unrealistic in the face of the economic necessity to earn one's living. The ecological awareness movement has always suffered under an image of being out of touch with the majority of people. The self-appointed spokespeople for the masses indicate that the working people do not care about ecological issues, as these issues do not put bread on the table. Pragmatic economic thinking is considered to be the province of those who understand the bottom line of profitability. Knowing how to invest capital and investing it shrewdly is the current mark of wisdom and self-sufficiency. According to this criterion, if your portfolio is healthy, then all is well. The shortsighted folly of this type of economic reasoning is becoming more apparent daily to anyone who is paying attention to environmental concerns. Certain global issues are becoming more a part of the common consciousness, now that we are beginning to realize the probable ramifications of ozone layer depletion, the greenhouse effect, acid rain, aquifer contamination and other life-threatening ecological crises. These crises do not become meaningful until one's own well is poisoned. Stories on the back pages of the newspaper or blips on the evening news are not as impressive as personal experience. Long-term ecological threats to the natural processes that allow us to put bread on the table make our day-to-day economic planning ludicrous.

Among the problems we face is the notion that growth in the industrialized countries, and especially the United States, is associated with the greater good, no matter what the environmental costs. We are addicted to the proposition that we must continually grow economically or we will stagnate. The frenzied promotion of economic growth is such that suggesting that there are limits to growth is akin to a lack of patriotism. Candidates for office castigate those who suggest that there must be limits to growth as being pessimistic about the future. In contrast, they suggest that humans who are optimistic can solve all problems through economic growth. We are "better off" than most, such advocates point out. But we are not happier or more at peace due to our pursuit of unlimited growth. Unlimited material growth inherently produces continual dissatisfaction. Like the addict, we can never come to a juncture where we can stop and be satisfied. We must continually top the last profit statement, the last construction marvel, the last greatest hit.

The problem posed by growth and development is gaining momentum as a national issue. As homeowners realize that their hard-won plots of land are threatened by uncontrolled growth and pollution, they find common ground with the environmental movement. The threat of gridlock in air

traffic and the fact of gridlock in automobile traffic is more tangible evidence than the loss of wildlife, or farmland, to many people because they are aware of its direct effect upon them. They are becoming aware of the direct effects of attempting to dispose of garbage. "Taking out" the garbage becomes impossible when there is no place to take it. Of course we can always burn that garbage which will burn, but that increases airborne toxins and the unpleasant probability of atmospheric change. The things we "throw away" come back to haunt us. Our linear economic system is programmed for failure due to the limitations imposed by finite and circular ecological systems.

But growth is still inevitably associated with progress. The Industrial Revolution was not promoted by cynics who were thinking only of making a killing and leaving havoc in their wake. Similarly, proponents of high technology today often feel that if we only could make a breakthrough in technology we would be able to feed the hungry, explore the frontiers of space, eliminate disease, end war and generally benefit all of humanity. Economic theorists urge growth as a panacea to these same problems. Unfortunately, we are looking for solutions in the wrong place. Rather than easing urgent social and human problems, high rates of growth have been accompanied in many countries by increasing unemployment, and a general deterioration of social conditions. (67)

What is the best way to have more? The simplest way is by using less. Even taking into account the current economic philosophy and making no changes except in more efficient energy use, quite a bit can be done. We like to think of ourselves in the United States as number one, but in conservation efforts our rating is low. We recycle much less than Japan or European countries. We generally fail to conserve energy used at the source. During 1973-78, 95 percent of all new energy supplies in Europe came from more efficient use. At the same time in the United States, 72 percent of new energy supplies came from conservation measures--two and one half times as much as the energy from other new sources. (68) According to "World Enough and Time":

"Energy efficiency is paying dividends in countries with an abundance of resources and in countries with relatively few resources. In the Dominican Republic production growth accelerated from 4.5 to 6 percent between 1960 and 1970, even though half of all export earnings had to be spent on energy imports. But energy consumption, which had been rising by 14 percent per year up to the oil crisis, fell subsequently by 1.2 percent annually until 1981. Energy efficiency increased significantly. Similarly in Singapore, production growth barely flickered, declining from 8.8 percent annually in the 1960s to 8.5 percent in the 1970s, but the growth of energy consumption fell from 9.4 percent before the oil crisis to 1.6 percent thereafter. Despite having no energy resources whatever, Singapore ended the period with a debt service burden of less than 1 percent of annual exports. By contrast, Mexico, an oil exporter experienced a decline in GDP (gross domestic product) growth rates between 1960 and 1970 from 7.6 to 6.4 percent, despite the oil boom, and saw annual growth in energy consumption accelerate from 7.4 to 9.3 percent after 1974. Mexico ended the period in economic crisis, with debt service obligations 30 percent of export earnings." (69)

With efficiency as the key, better use and management of resources is not only possible and realistic, it is more profitable and beneficial for those who embrace conservation as an economic strategy. If there is a way to a full life, freedom and happiness it certainly does not lie in wasting our resources. Nor will it come about by making our international energy policy entirely dependent upon exploiting oil, coal and nuclear power, the only energy resources recognizing by the Progressives.

We can and must change our patterns of resource use. Conservation is not just a dream of the back-to-the-wilderness set. We are beginning to see that our energy-intensive, wasteful way of

living is not even good business sense in the traditional narrow economic analysis. Organic farming is saving money for farmers, not in the distant future, but within one or two growing seasons, by eliminating or cutting the costs of pesticides and expensive manufactured fertilizers. Even the main assumption of the benefit of pesticide use, that it would eliminate the pests in question, has proven false. Since World War II, when massive use of pesticides began, crop losses due to insects have not decreased. On the contrary, they have almost doubled. 70) Of course, farmers save money by utilizing techniques which do not require the application of manufactured fertilizers and pesticides. Since 1945 the use of chemical fertilizers increased sixfold while the use of pesticides on American farms increased twelvefold. When increased mechanization and longer transport is considered, 60 percent of the costs of food are now costs of petroleum. (71)

Fertilization of crops was accomplished naturally for thousands of years. We now use energy to transport synthetic fertilizers to be applied to crops. We do this under the assumption that applying the techniques of the assembly line to farming is better and more efficient than old-fashioned technology. In following this assumption to its end, however, it is obvious that using agricultural resources in this manner is only effective in the short term, and is disastrous in the long term. Assembly-line farming encourages monocropping, soil erosion, and devastation to the wildlife which forms part of the successful natural growth cycle. It introduces toxic substances into water systems which contaminate those systems to intolerable levels. In contrast, conservative tillage, crop rotation and other methods of working in harmony with natural cycles allow for continuous, sustainable agriculture.

We have dangerous assumptions regarding conservation in other areas also. One is that we can't "afford" to use principles of conservation and still stay in business. Nothing could be further from the truth. Conservation is economically more viable than dumping wastes, even prior to computing the costs to the environment, because we throw away potential energy that can be used in a cost efficient manner. One remarkable example of the benefits of conservation on the industrial level is the experience of the 3M corporation. They found that over a decade they were able to eliminate annually more than 90,000 tons of air pollutants, 10,000 tons of water pollutants, a million gallons of waste water, and 150,000 tons of solid wastes. In doing so, 3M has generated an estimated total savings for the company of about \$200 million, of which 60 percent represents annual operating and maintenance costs. (72) Hundreds of thousands of trees are used daily to produce America's newspapers; less than one-third get recycled. **Recovering just one run of the Sunday New York Times would save 75,000 trees.** Each ton of paper recycled saves 17 trees, 25 barrels of oil, 7,000 gallons of water and three cubic yards of landfill space. (73) By not recycling, not only do we lose the income which can be generated, but we pay to have the waste burned or buried, and pay again, usually decades later, to "clean up" the resulting contamination.

Greater efficiency can be realized in the economy as a whole by embracing what Amory Lovins has termed soft energy paths: cogeneration (the process whereby energy released as a by-product of certain industrial processes is harnessed for further application), active and passive solar energy, wind machines, hydroelectric plants and biomass conversion. These avenues have not been fully explored because the centralized corporate structure has not included them. Our current economic structure favors energy use that is easily metered and rated, with no concern for its efficiency. We have subsidized such energy use through government research on nuclear energy, government subsidies to large scale energy projects and government agricultural research and aid which encourages petrochemically augmented crops. Of course, when we say government we are always speaking of taxpayers' money. Subsidies for large business concerns are nothing new, but few

people recognize the extent of these subsidies and the manner in which they discourage conservation. The willingness to embrace technologies which are less complex and more efficient is offset by government approval and support of current, less efficient practices.

In the United States we continue to mismanage our energy use as we have for many years. Only 5 percent of industrial energy is cogenerated in the U.S. In comparison, European countries cogenerate four or five times as much. (74) The United States accounts for one-fourth of the world's annual energy consumption, using twice as much energy to produce a unit of gross national product as some other industrialized nations. Though statistical comparisons have been available for decades, we fail to concern ourselves with our energy gluttony in the United States. Each American uses an amount of energy annually equivalent to that used by two Soviets, three Japanese, six Mexicans, eighteen Chinese, fifty-one Indians, two hundred and thirty-six Bangladeshis or three hundred and eighty-five Ethiopians. (75) Such statistics produce yawns in comparison to winning the lottery or getting inside information on the hot stock of the day, but they are a part of the most important economic news on the horizon. There is no rational or moral justification for our runaway energy use in the United States. During this short period of time in history, we have opted to waste resources in an unrestrained manner. To assume, as our political leaders assure us, that we will continue to maintain our wasteful lifestyles unabated into our children's and grandchildren's future is a fantasy which the laws of nature categorically deny. It will not happen.

We must have a meaningful national energy policy and strive for the creation of a cooperative international energy policy. To do this we must borrow from those countries or corporations which have been successful in making energy conservation work for them. We should make energy use the economic indicator. Rather than focus exclusively on making profits we must make efficiency the hallmark of progress. Cogeneration can result in energy efficiency of 90 percent as opposed to 30-40 percent. (76) Improved building insulation, along with improved efficiencies in cars and machines, would result in energy savings of 30-40 percent without any changes in our standard of living and economic activities. (77) We must rid ourselves of the notion that energy conservation and environmentally sound practices are an impairment to business. Rational environmental policies are an impairment to business only when we refuse to change our linear operating mode. When we put off the costs of sound environmental policy to profit now, we face higher costs in the future. The cost of properly dealing with hazardous wastes now is less expensive than cleaning up hazardous waste sites in the future. Source wastes are concentrated and accessible to processing, but once released into the environment they are dispersed over a large area. Source waste reduction, the process of eliminating wasteful practices prior to manufacturing, saves \$50 or more for each dollar invested. (78)M

Energy costs will increase over the long term, as energy becomes more costly to extract from the environment. Temporary oases such as the oil "glut" are illusory. The most expedient way to cut energy costs is through conservation, as is proven time after time by comparing the cost of energy conservation programs to the cost of building new energy-producing facilities. For example, a detailed study of the options for meeting energy demands in the U.S. Pacific Northwest through the end of this century found that the least-cost approach would be a combination of residential and industrial conservation investments and expansion of renewable energy sources (low-head hydroelectric potential), which would save \$2.7 billion---15 percent of the cost of meeting demands through the best conventional supply program---and eliminate the need for any additional conventional capacity. (79) Solar energy collectors, wind generators, organic farming, regional and local food production and processing, and recycling of waste products are soft technologies which

should be preferred due to the fact that they are economically more efficient when environmental costs are considered. It has been clearly shown that small-scale, labor intensive enterprises create more jobs and generate much lower social and environmental costs than large corporations. (80)

We cannot solve our problems in a piecemeal fashion. We have to deal with the worldwide effects of overpopulation, starvation, pollution, habitat destruction and the nuclear threat simultaneously, recognizing their interrelationships and the interrelated solutions to the threats that they pose. The Earthscan committee paper, "Environment and Conflict," documents beyond a shadow of a doubt the way in which ecological decay---deforested soil, neglect of agriculture, lack of population control--leads to political and military instability. It concludes: "In the complex web of causality of wars--and of guerrilla movements, riots, revolutions and other forms of violent conflict--environmental factors play a significant and neglected role." (81) By reducing ecological damage through conservation we will save resources for which we are in competition. Reducing competition reduces the likelihood of conflict, and therefore nuclear war. Many people, even a recent president of the United States, have mused that if we were attacked by a common enemy, such as an extraterrestrial, all nations would unite to save the planet. They need muse no longer. The degradation of our environment is the common enemy.

Better resource management increases the likelihood of feeding people, which is one very important factor in reducing population. As the strains of popular sentiment fade into the background, the continual fact of starvation around the world forces us either to look away or otherwise deny that anything can be done about world hunger. It is hard to imagine that world economic policy helps maintain the conditions which result in world hunger. That would tend to deny that we are the compassionate people that we believe ourselves to be. However, with exports available from many countries, the products of world agriculture come to a world "supermarket" where all are bidding for the food. Those who live in the industrialized nations have the ability to outbid those in the less prosperous nations. Such a structure virtually ensures that world hunger will continue unless land reform policies are adopted. It is worth noting that land reform policies have been successful not only in communist countries such as China, but in Japan, Taiwan and Korea. Successful strategies for ending hunger are available, if we will embrace them. Forty percent of the Third World population now lives in countries where hunger has been eliminated through "food first" policies in which export crops are not planted until domestic needs have been met. (82)

This is not information which is held in secret, under lock and key. It is only that our current economic schemes are far behind in embracing conservation, primarily due to the short-term pursuit of profit. In the next chapter, we will touch upon the available information which could aid in a transition to more rational and efficient resource management.