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THE FUTURE EATERS

I don't think God is going to ask us how He created the earth, but He will ask us what we did with what He created. Rich Cizik

In times of change, learners inherit the Earth, while the learned find themselves beautifully equipped to deal with a world that no longer exists. Eric Hoffer

You're not going to get success on the environmental struggle without getting people to agree to cut back their level of consumption and reorder the planet in a way that is ecologically rational. Rabbi Michael Lerner

A visitor to a village in Russia where the inhabitants were starving noticed some stacks of grain nearby. "Why," he asked, "don't you eat that grain?" The patriarch impatiently explained that the seed was being saved for next season's planting. "We do not steal from the future," he said. The 20% ecological overshoot (discussed elsewhere at this website or at the internet site of the Global Footprint Network) in 2002 took 20% more natural resources than the planet could regenerate. The United States now has an ecological overshoot of 3.6 hectares per capita. This overshoot is a measure of how humankind is "eating" its future.

Exceeding Earth's carrying capacity will almost certainly result in societal and ecological disequilibrium that will, in turn, reduce carrying capacity. However, another situation, called phantom carrying capacity, will exacerbate present carrying capacity problems. Phantom carrying capacity is the result of exploiting the benefits of oil, natural gas, and coal. These energy sources will not be regenerated in the short (i.e., a quick fix) time frames that most people expect. Alternative sources of energy could contribute to reducing ecological footprint size. For example, biofuels produced by agribusiness are typically produced by highly mechanized practices, use fertilizers that are based on petroleum, and require processing before they are useful in engines. The amount of energy used in the production of alternative sources of energy contributes to the footprint size. Some sources, such as the Athabasca tar sands, are difficult to process and require significant amounts of energy to do so.

Solar and wind energy are good alternative energy sources, but they do not have zero footprint size (e.g., they involve solar panels and windmills). Reestablishing public transportation in those countries that have permitted, even encouraged, its decline will take one or more decades. Major reductions in urban sprawl will take longer, even if adequate public transportation becomes available. Eliminating ecological overshoot is closely linked with population stabilization, but could begin immediately if humankind is truly concerned about future generations.

Only those humans alive after 1980 can be described as "future eaters" or people who consume "grain"/resources that are meant for future generations—future eaters are stealing from the future. Individual future eaters have probably always existed because numerous cultures have depleted natural resources faster than they were being regenerated (e.g., Ehrlich and Ehrlich 2004, Diamond 2005). However, economic globalization and population growth have increased humankind's ability to deplete natural resources. As usual, exponential growth ensured that the problem materialized quickly, long before social evolution had developed behaviors and practices to cope with this dangerous situation.

No justification can be given for not addressing this problem immediately!

Step 1. Calculate individual ecological footprint sizes. Many programs are available on the internet for calculating an individual's ecological footprint size and can be rapidly completed (a more detailed reference is Rees 1996). The result may be shocking, especially if the calculation is for a person who considers him/herself environmentally literate and who could not possibly be a future eater.

Step 2. Identify the major factor that determines an individual's ecological footprint size. Both the ecological footprint size and control of the footprint size will vary at different stages of an individual's life. Individuals have least control when they are very young or very old. My own life (I am 82 years old) illustrates this point.

I was born in the small factory town of Conshohocken, Pennsylvania, USA, in 1923. I grew up during the time of the Great Depression in the United States. My family's house was small, semi-detached (one wall shared with an adjacent house), and heated with coal. In those days, most houses were kept much cooler than they are today and had far fewer energy consuming appliances. I walked to school and used public transportation for longer trips. I could ride my bicycle to go fishing or to visit natural systems. The family automobile was mostly used on weekends to visit relatives (20 miles or less). Food was obtained from a nearby small grocery store and was mostly produced locally. Most summers included a vacation (two weeks) near Ocean City, New Jersey (about 80 miles distance). When I became a student at Pennsylvania State University in 1940, all my clothing fit in one suitcase and I carried a winter overcoat over my arm. Once there, all my travel was by foot. Although I had little control over it, my ecological footprint was quite small. For most of my education after World War II, I commuted by public transportation but did have a car for a significant amount of time that was adequate for short trips.

My ecological footprint size increased markedly, mostly due to energy used for travel, when I became a staff member at the Academy of Natural Sciences, Philadelphia, Pennsylvania. Professional field trips were frequent, as were trips to give seminars, present papers at professional meetings, complete service for professional societies, and the like. The twenty years between 1980 and 2000 was the peak time for traveling to present professional talks. My hope is that this travel helped reduce environmental problems; however, in view of the present ecological overshoot, I fervently wish an alternative had been available. The fact that those trips and many others were by invitation does not appreciably diminish my regret.

In the late 1990s, my wife's Alzheimer's (and, later, also Parkinson's) reached a stage where leaving her to present professional talks, even briefly, was not an option. In July, 2005, my website was set up—it has been a joy to have, and it enables me to share my thoughts with others. In March 2000, my wife and I moved into a townhouse in Warm Hearth Retirement Village. We had considerable control over our ecological footprint size, and we were not future eaters. However, in June 2001, my wife was moved to a nursing home, and, in September 2002, I moved to an assisted living center where I was close to her in the same retirement village. My wife had little or no control over her ecological footprint size, and my current control has been greatly reduced. However, I can control energy use, which has been minimal. I have an automobile, but I drive it less than 1, 200 miles per year. The communal dining room produces a small ecological footprint because of the economy of scale. In short, social norms have a significant effect upon my present ecological footprint size.

<u>Step 3</u>. Attempt to influence social norms so that group ecological footprint size is reduced. Influencing social norms is not an easy task, but economics (e.g., increased energy costs) has a significant influence on social norms. Europe has made commendable progress in this area and has developed many practices suitable for sustainable use of the planet. However, some recalcitrant individuals may require substantial peer pressure to even begin reducing ecological footprint size. If the resistance is substantial, perhaps only a major catastrophe will persuade people to adopt sustainable practices. Alternatively, strict laws on resource use similar to those existing during World War II may be necessary. Of course, a black market will almost certainly arise for scarce resources. As usual, powerful political leaders may manage to circumvent the rules that apply to the average citizen. The "reasoning" of non-conformists is difficult to understand. Globalization has leveled the "playing field" to a substantial degree, but adjustment to this new era will initially be slow.

<u>Step 4</u>. Adjust politically to the reduction of the power of nation-states and concomitant regionalization of power. Ecological overshoot may not result in the decline of powerful nation-states that, because of diseconomies of scale, lose power as resource wars continue nor will resource scarcity result in regionalization of power. Terrorism and vulnerability of societal infrastructure may ultimately favor regionalization, but the waste of resources and life might be substantial.

Cognitive Dissonance

Cognitive dissonance is anxiety that results from simultaneously holding contradictory or otherwise incompatible attitudes or beliefs. An individual may have a bumper sticker that reads "STOP GLOBAL WARMING" on a sports utility vehicle (SUV) that consumes very large amounts of gasoline or diesel fuel per mile. Since fossil fuel is a major source of carbon dioxide – a major factor in global warming – one owner justified owing a SUV by stating that ownership of such a vehicle might not be possible in the future.

Cognitive dissonance is also apparent at the national level. For example, both Zhenhua (2006), Director, State Environmental Protection Agency, China, and Narain (2006), Director, Center for Science and Environment, India, made statements that clearly espoused environmental protection, yet both India and China are increasing the use of fossil fuel. China has begun to gear its international strategy to its energy needs, and India has energy guzzling congestion at airports and on city streets (Editorial 2006). Of course, my previous travels to present talks about environmental protection are another good example of cognitive dissonance, all too frequently shared by other speakers. Many freedoms will suffer (e.g., freedom to breed) due to ecological overshoot and exceeding the planet's carrying capacity for humans. Yet these issues are rarely discussed in depth because a free and open exchange of ideas is a threat to cognitive dissonance. This situation is particularly evident during political elections when promises are made (1) to reduce taxes, (2) to increase benefits, and (3) to continue wars (a rose by any other name, etc.). The result of this cognitive dissonance is increased financial and ecological deficits and societal disequilibrium. Without cognitive dissonance, "future eating" would be greatly diminished or even disappear.

Who Ate the Future?

All humankind is responsible for consuming (i.e., "eating") natural resources essential to the maintenance of a habitable planet. A global 20% ecological overshoot (in 2002), which has worsened for decades, is the responsibility of the entire human species.

One would expect the world's religions to have a major role in establishing humankind's moral responsibility to posterity. The United States has a large ecological deficit and an excessive ecological footprint, both as a nation and for most individual citizens. How can this situation be explained when a nation that claims to be religious is taking far more than its share of the world's resources?

The world's leaders have, with some notable exceptions, espoused exponential economic growth with dangerous diseconomies, which threaten both global and national security. However, in countries with democracies, the people voted for these leaders but are not holding them accountable for their actions. In far too many cases, American citizens did not even trouble themselves to vote. The world badly needs leaders who have policies to correct the present dangerous situation and are not afraid to tell their constituents about the difficult road ahead (short-term) or the consequences of not making a mid-course correction. The candidate who does so would probably not get elected but would be doing (long-term) a great service to society.

Warnings

Although the news media and the scientific community could have greatly improved communications with the general public about the rapidly developing environmental crises, no literate person should have missed the message. Hansen (2006), a climate scientist in the US National Aeronautics and Space Administration (NASA) has attempted to alert both the scientific community and the general public that the huge Greenland ice cap is melting far faster than scientists had estimated. Twice as much ice is going into the ocean as was going in five years ago. Just sea level rise alone is a major cause for concern, but many others exist also. However, Hansen's recommendations for reduction of greenhouse gases did not meet the approval of NASA's public affairs team (staffed by political appointees), who tried to stop him from communicating this information. Gilbert and Sullivan would have loved this scenario – a research scientist in a US government agency who is attempting to inform the general public but is being opposed by public affairs personnel in the same agency. How about "I am the very model of a public affairs officer" to the tune of "I am the very model of a modern major-general"?

James Zachos, professor of Earth Sciences at the University of California at Santa Cruz, gave a talk on greenhouse gas emissions at the meeting of the American Association for the Advancement of Sciences (AAAS), February 17, 2006 (Paul R. Ehrlich, personal communication). He noted that human activities are releasing greenhouse gases more than 30 times faster than the rate of emissions that triggered a period of extreme global warming in Earth's past. At the same AAAS meeting, David Baltimore, Nobel Prize recipient and president of the California Institute of Technology, stated, "It's no accident that we are seeing such an extensive suppression of scientific freedom. It's part of the theory of government now, and it's a theory we need to vociferously oppose" (Dean 2006). Baltimore remarked that instead of twisting science to suit its own needs, government should be the guardian of intellectual freedom.

Despite these concerns about the Bush administration's political interference with science, the US Environmental Protection Agency (USEPA) is requiring prior headquarters approval for all communications by its scientists with the media (Environmental News Service 2006). The news director for USEPA's Office of Research and Development (ORD) sent a February 9, 2006, email to all staff: "We are asked to remind all employees that EPA's standard media procedure is to refer all media queries regarding ORD to Ann Brown, ORD News Director, prior to agreeing to or conducting any interviews. ... Support for this policy also will allow reasonable time for appropriate management response." In contrast, NOAA Administrator Conrad Lautenbacher told the *Washington Post*, "I encourage scientists to conduct peer-reviewed research and provide honest results of these findings" (Environmental News Service 2006).

Almost without exception, public statements made by scientists are based on research that has passed peer review in professional journals or at professional meetings, such as the AAAS meeting just mentioned.

Thus, the information is already in the public domain and would not be improved by comments from public relations personnel with no formal scientific credentials. If permission is required for scientists to meet with the media, the public's right to acquire valid scientific evidence has been seriously impaired, if not destroyed. American tax dollars are used to maintain this political interference in the scientific process. If this unscientific procedure is continued, then an organization, such as the US National Research Council, with credentialed scientists, should be set up to evaluate the effect of public relations staff on the communication of scientific information to the general public and the media.

Some reporters claim they find science journals harder to trust and not easy to verify (Bosman 2006). The incident that prompted this comment was the fabrication of evidence on human cell cloning by Dr. Hwang Woo Suk, a South Korean scientist. The prestigious journal *Science* retracted two papers of Dr. Hwang's when they received much publicity from the news media. The scientific peer-review system typically works very well, but failures inevitably occur. In this instance, the scientific process did identify the problem, and relatively quickly. To place this particular situation in perspective, the violations of ethics in the US Congress, corporations, and the news media itself can be cited. In contrast, the scientific process worked swiftly and conclusively. More personnel with some scientific credentials would be helpful to newspapers, news magazines, wire services, and television networks. One could then reasonably expect the same level of expertise that exists in sports, fashion, and movies.

Somebody Do Something

Individual environmental catastrophes make the news almost daily. Both individual scientists (including Nobel Prize recipients) and prestigious scientific organizations are alarmed at the rate of change in global warming, environmental pollution, and the like. Many promises have been made, but the unsustainable practices that created these problems continue and even increase. These unsustainable practices harm humankind, numerous other life forms, and the prospects of any descendents. Just to satisfy my curiosity, I carried out an informal survey of a variety of people of different ages, economic status, and level of formal education. Some illustrative examples I received for justifying inaction follow.

"What can one person possibly do to correct problems of this magnitude?"

This statement ignores the cumulative impact of large numbers of small, seemingly insignificant decisions. For example, traffic jams occur almost continually in large metropolitan areas when large numbers of people drive automobiles to attend a sporting event or to drive to and from their place of employment. If a large number of people decided to adopt sustainable practices, use less energy, or stabilize the human population, very significant environmental benefits would result. However, until sustainable practices become a social norm, an adequate number of people must be willing to lead. "Leaders" in government, industry, and society would probably have a dramatic impact if, instead of telling people what to do, they actually practiced what they preached.

"I don't have time to be bothered with these things (i.e., environmental problems)."

What? Not enough time to leave a habitable planet for their descendents? Not enough time to prevent a global food shortage due to global warming, an energy crisis, and a 20% ecological overshoot? Not enough time to give millions of people now living in misery and starvation a modestly better life? SHAME!!! SHAME!!! How can any compassionate individual make such statements without feeling remorse?

"If you are on the Titanic, you might as well go first class."

The unsinkable ship mindset has faith that technology shields humankind from natural laws. An alternative mindset is to use credit to "improve" one's lifestyle instead of purchasing durable goods. Three quarters of American households carry debt. Basically, American citizens have a collective psychology that asks, "What are others doing and what can I get for myself?" (Gardner 2006). Surely, the crew of Spaceship Earth should have a more future-oriented mindset.

"How do I know other people will do their share?"

No one can know if others will do their fair share, or even a small part of it; the situation is similar to being in a leaky lifeboat with a group of strangers. If everybody bails, the lifeboat will float until rescue boats arrive. If not enough people bail, the lifeboat will sink and everybody, bailers and non-bailers, will be at far greater risk than they were before. At present, I am confident that the number of bailers is not adequate. This situation is an interesting test of what humankind calls intelligence!

Concluding Remarks

The 20% ecological overshoot is positive proof that humankind has too many future eaters. Anyone with a large ecological footprint is a future eater. Resource consumption and resource generation must be balanced now and kept in balance. In addition, if, as projected, 3 billion more people are added to the human population by 2050, per capita resource consumption must be reduced to maintain the balance between resource generation and consumption. The biospheric life support system must get a sufficient share of global resources in order to maintain the conditions favorable to the human species. A major change in the biospheric life support system is unlikely to result in conditions as favorable to humans as the present conditions are and, most likely, will be far less favorable. May humans cease being future eaters and become future guardians!

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