

NATURE'S WAY: QUANTITY FIRST, QUALITY NEXT

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Pressures resulting from unrestrained population growth put demands on the natural world that can overwhelm any efforts to achieve a sustainable future. If we are to halt the destruction of our environment, we must accept limits to that growth.

Union of Concerned Scientists
World Scientists' Warning to Humanity

Signed by over 1600 senior scientists from 70 countries, including 102 Nobel Laureates

It is not prudent to rely on science and technology alone to solve problems created by rapid population growth, wasteful resource consumption and harmful human practices.

US National Academy of Sciences and Royal Society of London, Joint Statement

If the world is to save any part of its resources for the future, it must reduce not only consumption but the number of consumers.

B. F. Skinner
"Introduction" to *Walden Two*, 1976 edition

Each species produces a large quantity of offspring – a larger quantity than needed for replacement. From this large quantity, nature selects quality – that is, the fittest individuals for the ecological niche the species occupies. If disease, starvation, and predators do not take the toll characteristic of the past, the population grows. However, if resources (e.g., food, habitat) do not expand at the same rate, the death rate increases until the population size is within the habitat's carrying capacity for that species.

Thomas Robert Malthus (demographer, evolutionary economics) published his essay "The Principle of Population" in 1798. He predicted that population would outrun food supply, leading to a decrease in food per capita. Malthus' basic assumption was that population, if unchecked, increases at a geometric rate (i.e., 2, 4, 8, 16, 32, etc.), whereas the food supply increases at an arithmetic rate (i.e., 1, 2, 3, 4, 5, 6, etc.). Transformations in agriculture, such as the Green Revolution, increased world grain production by 250%. Petroleum increased agricultural productivity since it was the source of fertilizers, pesticides, and cheap energy for plowing, harvesting, and transport of products to market.

The world's human population was about 6 million 10,000 years ago (<http://www.faculty.plattsburg.edu/david.curry/worldpop.htm>). However, while the global population continues to grow exponentially (1.5 million more each week), the global food supply is both shrinking and seriously threatened. For example, Brown (2006) noted in 2006 that the year's grain harvest was projected to fall short of consumption by 61 million tons, marking the sixth time in the last seven years that production had failed to satisfy demand. The threats to the world's grain supply that Brown (2006) identifies are a matter of grave concern: (1) farmers are facing a record growth in the demand for grain at a time when the backlog of technology to raise grain yields is shrinking, when underground water reserves are being depleted, and when

rising temperatures threaten to shrink future harvests and (2) the use of corn to produce automotive fuel (in 2006) will catch up with the US export of corn, which is estimated at 55 million tons. Although 55 million tons is only 16% of the US grain harvest, it exceeds the total grain harvest of Canada. Crop losses due to crop-withering heat are also a cause for concern. These concerns indicate that world grain will be a sellers market – bad news for the poor, but apparently not a concern for comparatively wealthy automobile owners.

Does Human Intelligence Have Survival Value?

The exponential growth curve for humans for the last 200 years looks remarkably like a fruit fly curve plotted on a different time scale. Earlier, I (Cairns 2007) speculated that *Homo sapiens* might be a transient species – not dissimilar from Earth's other species. Humans have been adaptable and have survived some very stressful periods. However, the profligate use of finite fossil energy, apathy about global heating, and exponential population growth on a finite planet indicate that humans are not quick to address these issues, although the means to remediate them already exists. Intelligence may be effective only at the individual level, although the widening income disparity indicates that only the very wealthy 1% benefits dramatically from intelligence as humans define it.

Ethics, Morality, and Altruism

In this commentary, the word *ethics* is defined as the rules or standards governing the conduct of a person or members of a profession. *Morality* is (a) a code of conduct put forward by a society or some other group, such as a religion, or (b) a code of conduct that, given specified conditions, would be put forward by all rational persons. *Altruism* is (a) an unselfish concern for the welfare of others, selflessness or (b) instinctive cooperative behavior that may be detrimental to the individual but contributes to the survival of the species.

Rockefeller and Elder (1992, p. 1) remark: "The global environmental crisis, which threatens not only the future of human civilization but all life on Earth, is fundamentally a moral and religious problem." However, if deed matched creed, no crisis would exist. For example, Nasr (1992, p. 86) remarks: "When one looks at the Islamic world today, one sees blatant signs of the environmental crisis in nearly every country, from the air pollution of Cairo and Tehran to the erosion of the hills of Yemen to the deforestation of many areas of Malaysia and Bangladesh." Gyatso (1992, p. 113) states: ". . . Buddhism emphasizes the application of reasoning and analysis." Again, this approach has not been practiced well, especially in countries where science and analysis are ignored or rejected. Finally, Rockefeller (1992, p. 162) points out that both Albert Schweitzer and Martin Buber call into question the western industrial-technological idea of the way to progress. Neither rejected the idea of progress, but point out that, if progress is to come, it must rest on a new ethical and religious foundation and be concerned first and foremost with the quality of a people's relations with each other and the larger Earth community. Clearly, this idea is still an aspiration rather than a reality.

The evangelical Christian communities have drawn significant attention to protecting God's creation (i.e., natural systems). However, obviously not nearly enough since the planet, including humankind, is in imminent peril. Schorsch (1992, p. 28) makes the important point that the magnitude of the environmental problem transcends national boundaries. This situation should be quite evident to anyone, even the marginally literate, about global heating and other types of climate change. Schorsch (1992, p. 34) also mentions self-denial – an idea badly neglected in this era of ecological overshoot. McFague (1992, p. 44) calls for a "planetary agenda" for all religions, as well as all the various fields of expertise and all those who help the poor and outcast. However, to accomplish this goal, all religions would have to state that more than one "true religion" exists and that individuals belonging to other religious groups might be "saved." Finally, some religious groups focus on making the individual "feel good," which is fine if the individuals do not assume that feeling good is all that is necessary – no need to drive less, use less energy, and reduce consumption of material goods even if all these activities would protect natural systems.

Along the same lines is "feel good environmentalism." An individual indulging in this approach can feel good when using ethanol because it is a "green" fuel (i.e., biofuels) – never mind that it drives the price of corn up, making it more difficult for poor Mexicans to purchase tortillas. However, the worst case scenario is a combination of "feel good" religion with "feel good" environmentalism in which individuals are relieved of responsibilities in order to make them "feel good." These individuals avoid any "gloom and doom" information because it makes them feel bad. Besides, they are members of enlightened groups who "do not need more information."

Apathy

Eliasoph (1998, p. 6) remarks:

. . . citizens circles of concern shrank when they spoke in public contexts. . . We often assume that political activism requires an explanation, while inactivity is the normal state of affairs. But it can be as difficult to ignore a problem as to try to solve it; to curtail feelings of empathy as to extend them; to feel powerless and out of control as to exert an influence; to stop thinking as to think.

Eliasoph (1998, p. 8) makes another telling point: "Listening to citizens conversing about politics in everyday life can reveal how some cultivate concern for the wider world, and how so many manage to convince themselves and each other not to care."

One of my concerns at the moment is the denigration of science in the nation's capital Washington, DC. A young person with no significant scientific credentials was assigned to keep track of and modify world-class scientist James Hansen's communications with the general public and the news media when Hansen's views conflicted with political ideology. The effort failed because Hansen was not easily intimidated and because such treatment was offensive to the scientific community. News came of the departure of the individual who made the assignment, but nothing significant was highlighted about those who ordered the surveillance. For example, the US Congress could have withheld funding from any agency not respecting the preponderance of scientific evidence.

Unexpected Deficiencies

Since I write about using less energy, I decided to monitor my own use of energy. I live in an assisted living home with food purchased, cooked, and served to me, so this monitoring was not easy. In addition, I gave up flying years ago when I was caring for my companion Jeannie. The most obvious energy consumer for me is my automobile. I reduced my use to visits to the physician, dentist, oculist, and cardiologist, all of which are only a few miles distance. Recently, my vehicle's battery went dead because it had been in the parking lot for over two months and not been driven. When I answered curious questioners about why AAA was working on my car, I sometimes received unexpected reactions to the lack of use of my car: "Some people need to drive to meetings"; "I need to drive to the mountains to relieve stress"; "Everybody else is driving wherever they please," etc. I was not commenting on their lifestyles, but merely explaining one aspect of mine. However, I do believe that public figures of all types should be criticized when they set poor examples, such as flying from Washington, DC, to Europe for a meeting on reducing greenhouse gas emissions.

Just Lie (i.e., Fib)

Clout (2007) reported that most people are more concerned with being seen as environmentally friendly rather than actually changing their behavior. A study by the Norwich Union found that 7 in 10 individuals regard appearing to be "green" as the new way of "keeping up with the Joneses." Although more than one half consider unethical living as much of a social taboo as driving under the influence of alcohol, 9 in 10 admit they tell little "green" lies to exaggerate their commitment to saving the planet. Arguably, the most important finding was that more than 50% stated that they are unlikely to alter their way of life, despite pressure from the media, politicians, and their children to be "greener." The final blow is: "And the danger is that we are not taking the very simple steps that would make a difference." *Homo sapiens* is known as an adaptable species but will the adaptations just described help prevent nature's way of adjusting overpopulation and exceeding carrying capacity?

Mutualism vs Exemptionalism

Earlier in this commentary, I briefly discussed altruism as a means of saving both humankind and the planet. However, altruism is unlikely to get humankind out of the global mess it created. Ridley (1998, p. 19) discusses the publications of George Williams and William Hamilton, who asserted that not only was the human being just another animal, but it was also the plaything and tool of a committee of self-interested genes. Ridley (1998, p. 38) states: "Consciously or implicitly, we all share a belief in pursuing the greater good." He further notes (p. 39): "If a creature puts the greater good ahead of its individual interests, it is because its fate is inextricably tied to that of the group: it shares the group's fate." However, this connection does not appear to be happening at the global level. Leahy (2007) calls attention to the "silent global crisis" [soil erosion], which is undermining food production and water availability, as well as being responsible for 30% of the greenhouse gases driving climate change.

Dyer (2006) summed up the situation accurately:

We are still living off the proceeds of the Green Revolution, but that hit diminishing returns twenty years ago. Now we live in a finely balanced situation where world food supply just about meets demand, with no reserve to cover further population growth. But the population will grow anyway, and the world's existing grain supply for human consumption is being eroded by three different factors: meat, heat and biofuels.

I do not like the firm statement: "But the population will grow anyway, . ." since it will not. The only question is: will the laws of nature keep the human population within Earth's carrying capacity or will human society do so? Dyer (2006) remarks: "It takes between eleven and seventeen calories of food (almost all grain) to produce one calorie of beef, pork or chicken and the world's production of meat has increased fivefold since 1950."

However, the most sobering analysis is that of Kindall and Pimental (1994), which is long but very well documented. Some of their points follow.

- (1) Serious degradation and loss of the world's arable land is taking place, and expansion of irrigation, vital for food production, is becoming more costly and difficult.
- (2) Current levels of food production must be increased more than proportional to population growth so as to provide most humans with an adequate diet.
- (3) In 1994, only the US and Canada (2 of 183 nations) were major exporters of grain.
- (4) In 1994, food production was adequate to feed 7 billion people a *vegetarian* (italics mine) diet, with ideal distribution and no grain fed to livestock.
- (5) Almost all arable land in crop production, especially marginal land, is highly susceptible to degradation; about one-fourth of this land should not be in production.
- (6) Topsoil is being lost at 16 to 300 times faster than it can be replaced.
- (7) If damage continues, nearly 30% of the presently irrigated acreage will be lost by 2025, and nearly 50% will be lost by 2050.
- (8) The 1988 US experience is enlightening. This year was the hottest on record to that time and was accompanied by a mid-continent drought, resulting in 30% decrease in grain yield. This decrease dropped the US production below consumption for the first time in 300 years. Similarly, Canadian production dropped by 37%.
- (9) Ruminant livestock (cattle and sheep) graze about one-half of Earth's total land area. In addition, about one-fourth of the world's croplands is devoted to producing grains and other feed for livestock.
- (10) A pessimistic scenario considers qualitatively the possible consequences of climate changes and ground-level ultraviolet radiation increase that could depress crop yields, coupled with the high UN population growth projection, leading to nearly 13 billion people in 2050.
- (11) An optimistic scenario assumes rapid population growth stabilization with a 2050 population of 7.8 billion, significant expansion of energy-intensive agriculture, and improved soil and water conservation with some reclamation of now-abandoned land. In this scenario, the developed countries provide the developing nations with increased financial resources and technology, and a more equitable distribution of food is achieved. A shift would occur from high animal protein to more plant protein consumption in the developed countries, freeing more grain for developing nations.

The analysis of Kindall and Pimental (1994) is well over a decade old and was prophetic. The optimistic scenario was an insight into what might have been – an aspiration rather than a reality. The pessimistic scenario was, regrettably, right on target: "There is, in this scenario (pessimistic), little hope of providing adequately for the majority of humanity by the middle or later decades of the period we consider (up to 2050)" (Kindall and Pimental 1994).

Humankind could have initiated many strategies to reduce the impact of climate change, peak oil, the dangerous agricultural situation, and exponential population growth. Except for climate change, no substantive debate has been forthcoming on the other issues. So, the default position is nature's way, which will almost certainly be more brutal than sharing resources more equitably, using birth control to eliminate exponential population growth, using less fossil energy, and taking better care of agricultural lands. Gore, in an interview with Kim (2007) was asked if he were considering being a US presidential candidate. Gore replied: "It may well be that the best use of whatever skills and talents and experiences that I have is to concentrate on creating that sea change in mass opinion about this issue, so that whoever is elected will face a groundswell from the people themselves." Abundant literature is available on the four major issues but, as yet, no groundswell on any.

How should people behave in such circumstances? I believe one should behave as if being on the "right path" is the primary goal, even if it does not affect the outcome. The same statement could be made

about war, slavery, torture, and murder (to mention just a few illustrative examples). In short, humans should behave ethically under all circumstances.

I thought that sustainable use of the planet was a justifiable, ethical position if based on a harmonious relationship with natural systems. However, since this goal no longer seems possible in a rapidly changing planetary environment, humankind should not be bitter if nature's way seems harsh. Balance is merely being returned to a system in disequilibrium and will probably be no harsher than the treatment humans have given other life forms. Once the balance is restored, humankind may have another opportunity to live harmoniously and sustainably with natural systems. If not, the fate of humankind will not be different from the countless other life forms that were once inhabitants of Earth.

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