

AS I SEE IT

Sustainability ethics matter

John Cairns, Jr.*

Department of Biology, Virginia Polytechnic Institute and State University, Blacksburg, Virginia 24061, USA

Some men have thousands of reasons why they cannot do what they want to, when all they need is one reason why they can.

Mary Frances Berry

Free yourself from attachment to useless things.

Buddhist Maxim

When I am asked what my major professional interest is, my reply frequently elicits a variety of stunned responses: 'Nobody cares about ethics anymore; ethics is not relevant'; 'I look out for #1. Let future generations look after themselves just as I do'; 'Exactly what do ethics and sustainable use of the planet mean?' However, I am reassured that an increasing minority shares in supporting the quest for sustainable use of the planet and sustainability ethics. Many people have heard about sustainable development, but they often assume the term applies to perpetual economic growth. Instead of reciting conventional definitions of the words, I usually tell people about my values and the areas of life that matter to me.

1. I care that humankind is destroying the planet's ecological life support system upon which it depends.

2. I care that future generations may not inherit a habitable planet.

3. I care that humankind is now in an epoch of species extinction mostly caused by humans.

4. I care that 1.2 billion people are living on US \$1/day or less.

5. I care that cultures both fall (often quickly) as well as rise, with collapse triggered by one or more ecological events.

6. I care that humankind is a part of natural systems, not apart from them. Ignoring this relationship puts humankind at peril.

7. I care that humankind is not using its vaunted intelligence to replace unsustainable practices with sustainable ones.

8. I care that humankind does not recognize that a finite planet cannot tolerate exponential growth of *Homo sapiens*.

9. I care that human society is destroying the habitat of other life forms at an appalling rate in the name of economic growth.

10. I care that humankind is squandering increasingly scarce natural resources on war and the preparation for war (i.e. 'defense').

11. I care that economic capital is more highly valued than social capital (i.e. material possessions are replacing a sense of community).

12. I care that human society is depending on technology to solve the problems humankind has created rather than re-examining its value system.

13. I care that an abrupt global climate change could drastically reduce Earth's carrying capacity for humans.

14. I care that changing weather patterns will have adverse effects upon many of the planet's species, although eventually evolutionary processes will replace those species lost with others.

15. I care that misery and starvation are still factors reducing human population growth when other less brutal means are available.

16. I care that growth of human population and rate of material consumption will make the transition to sustainable use of the planet increasingly difficult.

17. I care that global climate change will adversely affect world economies, including insurance costs, retirement funds, food prices, and many other sectors of the economy.

The first color picture of Earth from the moon was a paradigm shifting experience for many people—a small, fragile, tiny blue globe containing the only life that has been found in the galaxy or even universe—not an overpowering picture of everyday life that

*Email: jcairns@vt.edu

often consists of hundreds of attention-grabbing television channels, the Internet, and multiple jobs for one person. Humans should be passionate about protecting Earth, both for themselves and the future generations of their own species and other life forms. A life without a passion for values (i.e. ethics) is a round of superficial events. Priorities that reflect obtaining money and material possessions trap an individual in an aimless existence in which goals are shaped by advertising, approval of others, and the accumulation of 'stuff.' An increase in material possessions, whose creation uses excessive amounts of increasingly scarce resources, is the result of being led by the profit motive of advertisers. Why have societies in developed nations 'sold out'? Lifestyles are being 'sold' to society for profit, which all too frequently is obtained from activities damaging to natural systems. In addition, corporations that profit from resource consumption and selling material possessions subsidize candidates and office holders who favor exponential growth. The life energy of humankind should not be drained by activities that are so harmful. As Socrates stated, 'The unexamined life is not worth living.'

Gandhi listed seven deadly social sins: (1) politics without principles, (2) wealth without work, (3) commerce without morality, (4) pleasure without conscience, (5) education without character, (6) science without humanity, (7) worship without sacrifice. Avoiding these 'sins' is an essential foundation for sustainability ethics.

What is humankind's justification for being on this planet as a part of and dependent upon natural systems? Surely, humankind's purpose is not to engage in consumerism at the expense of natural systems. Failure to consider the ethical components of defining moments,¹ which could either help human society to achieve sustainable use of the planet or cause failure, deserves serious attention. However, individuals attempting to survive one day at a time probably find the aspiration for sustainability meaningless, even insulting.

After population growth and demographic shifts, the next global sustainability crisis will almost certainly be the availability of freshwater, both quality and quantity. The eventual crisis is worsened by the probability that rainfall patterns will be altered by global climate change. Availability of freshwater has been worsening for decades and is already badly in need of an application of sustainability ethics.

The situation involves freshwater resources. The basic evidence is readily available to politicians, world

leaders, and any other inhabitants of Earth willing to make a modest effort. Only a small portion (4%) of the planet's water is of critical interest to humankind—approximately 70 million cubic kilometers. Water covers nearly three-quarters (71%) of the planet's surface. The hydrosphere is estimated at 1,420 million cubic kilometers (Source: FAO/World Water). All water benefits some life forms—humans extract resources from and travel on the vast oceans—but it is freshwater that is a limiting factor.

The residence time of a drop of water in human cells is a few hours, 8 days in the atmosphere, and only days to weeks in most flowing systems (i.e. streams, rivers, etc.). In contrast, the residence time of a drop of water in the oceans is estimated at 2,500 years and 1,400 years in underground aquifers (at least until extraction with pumps began). Some areas of the planet have abundant freshwater; others have very little. However, this essential component of all life forms is mismanaged nearly everywhere.

Flowing water has been used from Roman times to the present as a convenient means of transporting wastes away from the area in which they were produced. Even in Roman times, people usually lived downstream, so the practice has always been unethical. Even if no humans lived downstream, huge numbers of species with varying degrees of tolerance for anthropogenic wastes inhabit aquatic ecosystems. Aquatic ecosystems can assimilate limited quantities of waste and may even improve the water quality if the integrity and health of the ecosystem has not been impaired. Humans have an ethical responsibility for the condition of these ecosystems.

One cannot pollute aquatic ecosystems and be immune from the consequences. The capacity of aquatic ecosystems for self-purification must be retained for sustainable use of the planet. Vast amounts of freshwater are displaced from the normal hydrologic cycle for irrigation, as well as domestic and industrial use. Competition is high for finite amounts of water between domestic/industrial and agricultural special interest groups. Both uses endanger aquatic organisms by pollution and extraction.

The Third World Water Forum, Kyoto, Japan, 2003, discussed many of these issues. However, a defining moment for freshwater management was the 1977 International Water Conference, held in Mur de Plata, Argentina. Other meetings have been convened, but none have resulted in sustainable use of water.

In some areas of the world, the minimum flow needed to maintain the integrity of aquatic life forms is debated. Agricultural, municipal, and industry special interest groups with substantial funds are usually opposed in the debate by comparatively poorly funded environmentalists. Economic concerns usually win,

¹A defining moment is one that causes a paradigm shift

which is not surprising since short-term economic issues usually get more attention than long-term sustainability ethics and issues. Sustainable use of the planet requires that unsustainable practices be replaced by sustainable practices.

The following statement on political cyclicality has been attributed to Professor A. Tyler, late 1700s, regarding the fall of the Athenian Republic (V. Abernethy, pers. comm., July 3, 2003):

The average age of the world's greatest civilizations has been two hundred years. These nations have progressed through this sequence. From bondage to spiritual faith; from spiritual faith to great courage; from courage to liberty; from liberty to abundance; from abundance to complacency; from complacency to apathy; from apathy to dependence; from dependence back into bondage.

The quest for sustainable use of the planet is an attempt to maintain a sustainable relationship with natural systems in which the desire for abundance is restricted by voluntary or involuntary alteration in human behavior so that the ecological life support system is not damaged and natural capital and ecosystem services are cherished and maintained in robust health. Moreover, intelligence and reason may be capable of dampening political cyclicality or ultimately eliminating it altogether. Sustainability ethics seems the most promising means of reaching this desirable goal. Sustainability cannot be achieved if world leaders, politicians, economists, and the citizenry as a whole espouse exponential growth on a finite planet, especially at the expense of posterity. Arguably, the most important achievement would be the ability of most of humankind to visualize the complex web of connections—ecological, social, and cognitive—that compromise the planet's life support systems. This recognition would acknowledge that no individual can exist in isolation from the life support system.

I believe in an essential goodness in all humankind that, if free from the advertising of greed, will preclude the horrendous damage to the planet's ecological life support system and concomitantly to posterity. If this expectation is not fulfilled, it will indicate that human intelligence and brain size was not the evolutionary success humans boast about. Mainstream scientists agree that the biotic crisis is likely to result in a major extinction of species.

Myers & Knoll (2001) believe that, probably more significant in the long term, the crisis will surely disrupt and deplete certain basic processes of evolution, with consequences likely to persist for millions of years. They speculate that distinctive features of future evolution could include a homogenization of biotas, a proliferation of opportunistic species, a pest-and-weed ecology, an outburst of speciation among taxa that

prosper in human-dominated ecosystems, a decline in biodiversity, an end to the speciation of large vertebrates, the depletion of 'evolutionary powerhouses' in the tropics, and unpredictable emergent novelties. Almost certainly, even a few of these conditions will not favor sustainable use of the planet and might even reduce or eliminate *Homo sapiens*.

First order effects might well include: (1) elimination of between one-third and two-thirds of extant species (e.g. Wilson 1992); (2) a mega mass extinction of populations, with an impact proportionately greater than the mass extinction of species (e.g. Hughs et al. 1997); (3) probable crossing of ecosystem thresholds (e.g. Woodwell 1991); (4) invasions of exotic species and other alteration of biotas (e.g. Mooney & Hobbs 2000); and (5) major reduction and possible elimination of some biomes (e.g. Raup 1991).

Accelerating the pace of evolutionary change is a dangerous threat to sustainable use of the planet. How can one species, *Homo sapiens*, hope to thrive and persist when the planet's ecological life support system is experiencing major evolutionary change over a period likely to encompass millions of years? Sustainable use of the planet would be more probable if evolutionary change were at a slow pace to which humans could accommodate more readily. If sustainability models are to be truly long-term, they must include evolutionary processes and change as a major component. Morowitz (1992) notes that sustained life is a property of an ecological system rather than a single organism or species.

Almost certainly, any major disruption of Earth's ecological life support system will reduce the planet's carrying capacity for humans. Persuasive evidence already exists that the sixth great extinction of species is underway. Taking precautionary measures to enhance the probability of achieving sustainable use of the planet at once is justified since the tipping point (i.e. crucial ecological threshold) is not known. Humankind should engage in an ethical dialogue on these issues while concomitantly improving predictive models of future events. One of the major benefits of this would be avoiding resource wars that could easily be triggered by reduced carrying capacity (carrying capacity refers to the ability of natural systems to support a finite number of people marginally or optimally depending on the resources per capita). Increased carrying capacity reduces the likelihood of resource wars. An abrupt decline in carrying capacity is likely to increase aggressive behavior of individuals and nations. At the very least, a dialogue on sustainability ethics would reduce human suffering and reduce the rate of biotic impoverishment. An ideal outcome would be to leave a habitable planet for posterity.

Above all the quest for sustainable use of the planet is an expression of optimism about the long-term future of humankind. Humankind can (1) reduce, perhaps even eliminate, abject poverty, (2) develop a mutualistic relationship with natural systems, and (3) leave a habitable planet for posterity. If I did not have confidence that humans could live sustainably, I would not, at nearly 81 years of age, be spending a very substantial portion of my remaining years espousing the ultimate quest of our time. I may not live to see a major transition from unsustainable to sustainable practices, but I am comforted that we have the means to do so and lack only the will.

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