CHAPTER 3

Global Discourse on Interactive Crises

As I say, I'm a discourse advocate. What form it comes is less important to me than the fact that there is discourse.
Jim Lehrer
US National Public Radio

We are not made wise by the recollection of our past; but by the responsibility for our future.
George Bernard Shaw

The lack of civil discourse on the eight interactive global crises (i.e., human economy, climate change, exponential human population growth, ecological overshoot, biotic impoverishment and reduction of biodiversity, renewable resource depletion, energy allocation, and environmental refugees) is frightening, since they could, individually or collectively, destroy civilization as presently known. Some crises elicit hostile exchanges (e.g., climate change). For others, discussion is essentially taboo (e.g., exponential human population growth). For still others, rhetoric is plentiful but has little substantive remedial action (human economy). For far too many, public and political literacy is too low (e.g., ecological overshoot, renewable resource depletion, environmental refugees). Discussion on the climate crisis is blocked by advocates of old sources of energy (e.g., fossil fuel) who fear loss of revenue resulting from competition from new sources of energy. A common factor in all eight crises is either ignorance about or deliberate disregard of the universal laws of physics, chemistry, and biology. Another important factor in the lack of discourse is an unwillingness to consider remedial measures if they might threaten human economic growth. All the crises are threats to the present Biosphere, which is the life support system for *Homo sapiens* and all other life forms, and is also the source of renewable resources that make the human economy possible.

Literacy always improves discourse; therefore, increased environmental literacy should be a high priority in any discussion on environmental topics — for example, a member of the US Congress believed that an unseasonable snowfall in Washington, DC proved that global warming was a hoax. An environmentally literate person would know that global warming is assessed by a long-term increase in global mean surface temperature. In addition, science confirms that episodic displays of variability are the norm for all attributes that affect life on the planet.

The eight interactive global crises (i.e., human economy, climate change, exponential human population growth, ecological overshoot, biotic impoverishment and reduction of biodiversity, renewable resource depletion, energy allocation, and environmental refugees) are generally considered individually, and, yet, they must be considered collectively since they are interactive. No synthesis exists for collective consideration either in science (although science is involved in each crisis in some way) or in policy matters, although effective policy cannot be developed on each of the items separately. The resulting discourse may seem disconnected because the crises are disconnected now in both science and policy making. However, an effective discourse will not be possible until a synthesis is reached in both science and policymaking.

Climate Change

Climate change is the crisis that has been the most prominent subject of any existing environmental discourse. Much attention has been given in the United States in the 21st century to the uncertainties in the global warming science, as if all life were certain and predictable. This importance is proposed by the same people who believed in and acted upon the conviction that the unregulated market would always return to equilibrium (Say's Law). In the 21st century, humankind learned the hard way that such an economic principle is not accurate. Uncertainty is the norm, and, when initiating any discourse, this reality should never be forgotten.

Even though believers and deniers have been outspoken in the press, some important factors still need to enter the discourse, such as the reality that comparatively small temperature changes can affect the structure of algal communities. For example, Cairns (1956a) found that comparatively modest increases in temperature can shift dominance from diatoms, to green algae, to bluegreen algae. The area known as Death Valley in western United States has one of the highest daytime temperatures in the world; it sometimes reaches 130°F,

but it has a diverse group of scorpion species. However, a small, further increase in temperature will probably drive many of the resident species to extinction. Even though this example is quite specific, increased discourse on climate change will include many such interactions.

The United Nations Climate Change Conferences in Copenhagen, Denmark (2009) and Cancun, Mexico (2010) did not result in substantive agreement on quantitative goals for reducing anthropogenic greenhouse gas emissions or a date for achieving any major global goals. In fact, the means of transportation (such as airplanes) used by delegates attending these conferences increased the global carbon footprint.

Biotic Impoverishment and Reduction of Biodiversity

Biotic impoverishment and a reduction in biodiversity reach a crisis level when species become endangered or even become extinct. Discourse on this crisis must include how to develop appropriate monitoring and examination techniques for as many species as possible. For example, a species can be quite near a lethal threshold and still appear normal, a common rather than an exceptional situation. Often, no easily observable deleterious effects can be detected at stress levels (e.g., toxicants, temperature) very near the response threshold (Cairns, 1956b). Even at the response threshold, not all individuals respond identically. Most single species thresholds are determined in the laboratory. In addition, the number of variables tested in the laboratory is far short of the variables in natural ecosystems (Cairns, 1983; Cairns et al., 1981). Nevertheless, many toxic chemical substances are being discharged into the Biosphere without adequate scientific information on their effects. However, if interactions between and among species, different levels of biological organization, and different chemical and physical interactions are added to the circumstances, then species loss could be reduced. Policy decisions must be based on the predominant scientific information available at the time, coupled with monitoring of the system at risk to furnish a feedback loop to provide an early warning if conditions change or worsen.

E. O. Wilson stated: "The one process ongoing in the 1980s that will take millions of years to correct is the loss of genetic and species diversity by the destruction of natural habitats" (Kolbert, 2011). During the three decades since Wilson made that statement, no global discourse has emerged on this topic and humankind is already paying dearly for this omission. The political and civic discourses that are dominant at present primarily concern the economy (e.g., jobs, taxes, financial security, funds for retirement) — all important issues, but less important than the survival of civilization and *Homo sapiens*, which are worth a global discourse! If not, Mother Nature (i.e., the universal laws of physics, chemistry, and biology) will solve the question of survival in ways that will impoverish humankind.

Exponential Human Population Growth

Civilization is in trouble! "Over the last few decades we have created a food production bubble — one based on environmental trends that cannot be sustained, including overpumping aquifers, overplowing land, and overloading the atmosphere with carbon dioxide" (Brown, 2011). Considerable uncertainty exists about when this bubble will burst However, 1 billion people going to bed hungry each night indicates for them that the bubble has already burst. The discourse on exponential human population growth must include discussions on food security as well as other resource crises.

"Climate change has likely intensified the monsoon rains that have triggered record floods in Australia's Queensland state, . . . with several months of heavy rain and storms still to come" (Fogarty 2011). In contrast, other parts of Australia have a decade long drought (the Big Dry), which has affected both agricultural productivity and wildlife. Bush fires are common. Many parts of the planet have reached a point where water is a matter of life or death. Black (2011) describes such a situation in Peru, which once had an ample supply of water. The drinking water supply should be part of any discourse. The issues of food and water supply are scary, but humankind should have an open discourse about them.

The Human Economy

The human economy is invariably the highest priority of nation states. A 60% increase in restaurant prices has been predicted due to rapidly increasing food prices (Bloomberg, 2011, 13 Jan), which will not likely be markedly decreased unless events dramatically reduce the human population (such as a "Black Death" pandemic disease). Increased resource prices, especially food, will reduce consumer spending and cause a decline in economic growth. Increased taxes to maintain schools, roads, bridges, and other components of society's infrastructure will have adverse effects on the perpetual growth of the human economy. In short, by giving the human economy the highest priority, humankind is neglecting global crises that adversely affect the human economy. From a systems perspective, such actions do not make sense.

Is Global Discourse Possible?

Addressing any global problem requires a global discourse on the issues involved. In addition, time may be very short to discuss some of the interactive global crises (e.g., global warming) if the positive feedback loops for such conditions as the release of frozen hydrated methane on the floor of the oceans speed up and discharge millions of additional tons of carbon dioxide in addition to the anthropogenic greenhouse gas emissions that are still increasing. No sense of urgency exists on the part of the general public or their political representatives to address these global crises. Scientists, of course, are often disturbed that they and their evidence are under attack from deniers of some of the crises. Conditions are not favorable for fostering a global discourse on them. An action-oriented response may only occur when multiple, climate-caused catastrophes occur in many parts of the planet.

Henry A. Kissinger (2011), US Secretary of State from 1973-1977, provides some intriguing suggestions on how sovereign nations might structure a discourse to avoid a cold war between the United States and China. His comments apply well to a discourse on the interactive global crises that might save the present Biosphere. Maintaining a good relationship between two powerful nations is extraordinarily difficult, but all nations on the planet will have to collaborate to save the present Biosphere.

> *(1) Care must be taken lest both sides analyze themselves into self-fulfilling prophecies.*
>
> *(2) Conflict is not inherent in a nation's rise.*
>
> *(3) . . . national aspirations* [must be subordinated] *to a vision of a global order.*
>
> *(4) Each* [nation] *assumes its national values to be both unique and of a kind to which other peoples naturally aspire.*
>
> *(5) America's exceptionalism finds it natural to condition its conduct toward other societies on their acceptance of American values.*

To be considered here also is the ability to accept the evidence published in peer-reviewed scientific journals, even if the "news is bad."

> *(6)* [A sovereign nation cannot act] *as if it can participate in or withdraw from international affairs at will.*

These actions have been the problem with climate change treaties.

> *(7) America has found most problems it recognized as soluble. China, in its history of millennia, came to believe that few problems have ultimate solutions.*

In terms of the eight interactive crises, people deny that seven of the crises even exist or believe that they have occurred in the past. In the United States, the conviction is that the financial crisis can be solved, but no robust evidence indicates that this belief is justified since economic recovery requires more resources than are available.

> *(8) American diplomacy pursues specific outcomes with single-minded determination. Chinese negotiators are more likely to view the process as combining political, economic and strategic elements and to seek outcomes via an extended process.*
>
> *(9) The aim should be to create a tradition of respect and cooperation so that the successors of leaders meeting now continue to see it in their interest to build an emerging world order as a joint enterprise.*

What is more important than solving the eight interactive global crises that threaten the present biospheric life support system (Cairns 2010)?

A framework for a global discourse integrating all eight global crises is difficult to outline because the need for one is not yet apparent to most humankind and its political representatives.

Conclusions

All eight interactive global crises worsened in 2010. Individual contributions too these crises (e.g., ecological footprint size) vary dramatically. If global cooperation is to be achieved, most nations and many individuals must take immediate action to reduce ecological footprint sizes, which will probably be strongly resisted by the huge footprint individuals and nations.

The discourse on interactive global crises should initially focus on global warming because that has been much in the news, but primarily because a huge quantity of recent scientific evidence has been published in peer-reviewed journals. In addition, a strong scientific consensus and endorsement has been offered by the US National Academy of Sciences, the UK Royal Society, and their counterparts throughout the world. If the science is ignored or rejected again, as it was in the Copenhagen and Cancun climate conventions, humankind will be too late to avoid the consequences of these interactive global crises.

A discourse on the eight global interactive crises should appropriately focus on the Biosphere since all the crises are occurring in some component of the Biosphere. The fact that all eight global crises are interactive

should be easily demonstrated, and the relationship of each of the global crises to the Biosphere should then become apparent.

The Intergovernmental Panel on Climate Change is a good model for structuring a discourse on the eight interactive global crises. Any panel or steering committee initiating a discourse on the eight interactive global crises should have had experience working with individuals from other disciplines and some members should be transdisciplinary individuals. Any task force charged with the policy portion of the discourse should have members who are literate on how science works. Some individuals will also be needed to integrate the products of both committees.

Synthesis is hard and funding is essential for a global discourse. A long-range global perspective is also essential.

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