

CHAPTER 40

**TO SURVIVE, HUMANITY MUST
LEARN MORE ABOUT THE
LARGER SYSTEM OF WHICH IT
IS A PART: THE PRESENT
BIOSPHERE**

 ***“NO, THOUGH A MAN BE
WISE, ‘TIS NO SHAME FOR HIM
TO LEARN MANY THINGS, AND
TO BEND IN SEASON.”¹***

 ***“TODAY THE NETWORK OF RELATIONSHIPS LINKING THE HUMAN RACE TO ITSELF AND TO THE REST OF THE BIOSPHERE IS SO COMPLEX THAT ALL ASPECTS AFFECT ALL OTHERS TO AN EXTRAORDINARY DEGREE. SOMEONE SHOULD BE STUDYING THE WHOLE SYSTEM, HOWEVER CRUDELY THAT HAS TO BE DONE, BECAUSE NO GLUING TOGETHER OF PARTIAL STUDIES OF A COMPLEX NONLINEAR SYSTEM CAN GIVE A GOOD IDEA OF THE BEHAVIOR OF THE WHOLE.”*** Murray Gell-Mann

 ***“WE CAN’T IMPOSE OUR WILL
ON A SYSTEM. WE CAN LISTEN TO
WHAT THE SYSTEM TELLS US, AND
DISCOVER HOW ITS PROPERTIES
AND OUR VALUES CAN WORK
TOGETHER TO BRING FORTH
SOMETHING MUCH BETTER THAN
COULD EVER BE PRODUCED BY
OUR WILL ALONE.”²***

 **THE EFFECTS OF HUMAN
BEHAVIOR HAS PHYSICALLY
ALTERED EARTH. THE CENTRAL
QUESTION IS: HOW MUCH
LONGER CAN DESTRUCTIVE
EFFECTS STRONGLY OUTWEIGH
CONSTRUCTIVE EFFECTS?**



WHEN PHYSICAL AND CHEMICAL CONDITIONS ARE APPROPRIATE, THE TWO BASIC NEEDS OF ALL LIFE FORMS ARE ENERGY AND RESOURCES.

- Humans discovered that the use of fossil fuel provided them with far more energy per capital than available to any other species.
- This abundance of energy per capita made it possible for humans to appropriate resources from other species.
- The abundance of energy also made the Industrial Revolution possible.
- Wastes from the Industrial Revolution were hazardous to most species, including *Homo sapiens*.
- Wastes (output) from non-human species serve as resources (input) for other species in the Biosphere.

ECONOMIC GROWTH, HUMANITY'S PRESENT ADDICTION, IS NOT SUSTAINABLE BECAUSE IT IS RESOURCE DEPENDENT AND RESOURCES ARE FINITE ON A FINITE PLANET.

-  **Worse yet, economic growth is presently based on fossil fuels that produce the greenhouse gas carbon dioxide and global warming.**
-  **Global warming is adversely affecting food production — “. . . *global food prices soared by 10% in July [2012], with staples such as maize and soybean increasing by 25% to an all-time high.*”³**
-  **World food prices are a major factor in civil unrest, which is not good for the global economy.**

RECYCLING, RATHER THAN “THROW-AWAY LIVING,” SHOULD BECOME THE CULTURAL NORM.

- 🌍 Recycling would markedly reduce ecological overshoot.
- 🌍 Exponential human population growth is dramatically increasing resource consumption.
- 🌍 Exponential human population growth on a finite planet means less resources per capita.
- 🌍 The extremely wealthy 1% of the population will probably not be markedly affected by resource scarcity, but about 30% of the population, the very poor, will be.
- 🌍 As long as the population / resource use / consumption problem remains essentially ignored, misery for many will be the norm.

THE OCEANS REPRESENT 71 PERCENT OF THE AREA OF THE BIOSPHERIC SYSTEM, BUT “... FORESTS COVER 31 PERCENT OF THE WORLD’S LAND SURFACE...”⁴

-  Forests provide both renewable resources (such as timber) and ecosystem services (*“they filter water, control water runoff, protect soil, regulate climate, cycle and store nutrients, and provide habitat for countless animal species . . .”*).⁴
-  Planted forests (monoculture) have a much lower biodiversity than old growth (mixed species) forests. *“The spread of planted forests has been accelerating, rising from an expansion of 3.7 million hectares annually in the 1990s to 4.9 million hectares annually the following decade.”*⁴
-  This biotic impoverishment at a mega-systems level for tree species and an even greater total loss of biodiversity has serious, often irreversible, effects upon the present Biosphere.

THE HUMAN POPULATION IS GROWING EXPONENTIALLY — THE HUMAN FOOD SUPPLY IS NOT. WHY IS THERE SO LITTLE PUBLIC ATTENTION BEING GIVEN TO THIS ISSUE?⁵

- 🌍 *“The world is in transition from an era of food abundance to one of scarcity. Over the last decade, world grain reserves have fallen by one third. World food prices have more than doubled, triggering a worldwide land rush and ushering in a new geopolitics of food. Food is the new oil. Land is the new gold.”⁵*
- 🌍 *“When this period of food abundance began, the world had 2.5 billion people. Today [2012] it has 7 billion.”⁵*
- 🌍 Critical thinking at the systems level on this crisis is long overdue.

 **PERPETUAL HUMAN POPULATION AND ECONOMIC GROWTH ON A FINITE PLANET WITH FINITE RESOURCES IS UNSUSTAINABLE MADNESS, AND YET, HUMANITY EXTOLS ECONOMIC GROWTH WHILE DISCUSSIONS OF POPULATION GROWTH ARE TABOO OR HIGHLY EMOTIONAL IF THEY DO OCCUR.**

-  Rarely is humanity's life support system, the present Biosphere, mentioned in public policy statements or political campaigns.
-  Establishing limits to growth and nurturing the planet's life support system benefit the common good and should be the basis of intergenerational ethics if humanity wishes to leave a habitable planet for its descendents.

THE NINE GLOBAL CRISES^{6,7} REMAIN UNADDRESSED, AND MOST, PROBABLY ALL, ARE WORSENING.

- 🌍 Water stress is common for many humans; anthropogenic greenhouse gas emissions continue to rise; and biodiversity loss and biotic impoverishment continue, as does exponential human population growth, oceanic acidity that may reach corrosive levels in the polar regions, and disparity in wealth.
- 🌍 If the present Biosphere collapses, even the wealthiest one percent of the population will have no defense against the consequences.
- 🌍 *Homo sapiens* evolved in the present Biosphere and is the result of conditions that maintain it and the other species that evolved within them.
- 🌍 None of the past five biospheres were as suitable as the present Biosphere for *Homo sapiens*, and probably none of the future biospheres will be either.

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