



From Anthropocentrism to Ecocentrism: Making the Shift

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PANEL PERSPECTIVES

Global Ecology, Man and Environment

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Since the dawn of time global biological systems and ecological systems have experienced a long series of successive stages of evolutionary progress and changes, interrupted by several setbacks resulting from such enormous global catastrophes, as earthquake and volcanic eruptions, falling meteorites and floods, eras of glaciations and of desertification. Incredibly, only 5 million years ago the Mediterranean Sea was almost dry, closed off beyond the Rock of Gibraltar. Despite these catastrophes, throughout the millennia Nature has found a way to heal these wounds, and prolonged stable periods have enabled recovers from the ecological shocks and reestablishment of the overall species richness and diversity regulated by biological control-mechanisms. These two processes, disruption and regeneration, together modulated the form and composition of the ancient natural world, the Gaia, into which Mankind evolved. Today however, an unwise humanity has begun to create a new era, one that is remarkable in the unpredictability and instability of its major effecting forces. As a consequence, a new world is being molded, a world in which the biological and ecological stabilizing mechanisms are losing their ability to regulate, overridden by the multidirectional and alien pressures of anthropogenic factors. Carson's book *Silent Spring* (1962) provided the first much-needed shock treatment for the Western World, exposing the ugly face of "developed societies". In 1992 the community of "World Scientists" issued a Warning to Humanity (with more than 1500 signatures of prominent scientists), stating that "human beings and the natural world are on a collision course".

One example of our intervention in the global ecosystem is bound up with industry, whose effect on our atmosphere is two-fold: one is the emission of gases, particularly carbon dioxide and methane, the result of which is an increase in the greenhouse effect. The atmospheric temperature, expected by the end of the 21st century to rise by 3-5°C, will induce melting of the polar ice caps and glaciers, a phenomenon that will consequently lead toward changes in sea levels, flooding of low coastal areas, changes in coast lines and salination of important freshwater aquifers. Today around 200 million people dwell in such coastal areas, and it is predicted that 600 million will be living there by the end of the century. The hazards of sea level rise directly threaten these populations and their homes.

In addition to this future effect, the pollution caused by industry is producing a more immediate danger: Since WWII ca. 80,000 new chemical formulations have been developed by industry, of which only a small fraction have undergone even minimal testing for their toxicity to living beings, including humans. Many of these chemicals have found their way into the surrounding atmosphere, our water and foods, distributing toxic dioxins and other gases. The atmosphere surrounding us is in fact a giant chemical laboratory, in which the by-products emitted by various industries become dispersed worldwide, scattering various xenobiotics and producing novel toxic molecules that inflict tremendous problems upon nature and human health. And now, with the genie already "out of the bottle", our surroundings have become filled with chemicals imitating sexual hormones, antibiotics, organochlorides, methallothionines,

heavy metal ions and gases, most of which can induce pathological alterations in our living systems, including infertility, intersexuality, genotoxicity and carcinogenesis. Not so long ago it was very easy to kill a housefly with a short spray of pesticide; today we constantly need new formulations and higher concentrations to do so.

The constantly increasing exploitation of organic energy forms an additional factor that contributes to the atmospheric pollution and warming, as well as negatively influencing our health. The vehicles that clog the streets of our cities are the major contributors of pollution to the air that we are inhaling. Most of our mothers, when strolling with their babies along the streets of the larger cities, don't recognize that they are in fact being enwrapped within the plumes of gases from passing cars. As a result of all these "ingredients" our health is endangered; in nature species richness and biodiversity are in dramatic decline, and the world is losing numerous species, among which are many of possibly high importance not only for the ecosystem, but also for man. The "artificial" factors of the environment are loading on the organisms information of short-life value, which impairs their ability to survive future changes. We are living in a time when every particle of dust in the atmosphere becomes impregnated by acid pH and a cocktail of chemicals. The acid rain killing forests is only one evidence of this. If we are to fight against this, it is not enough simply to publish declarations, such as the pronouncements to date concerning the health of the Mediterranean Sea: starting with the Barcelona Convention of 1995, over 10 Declarations and Programs about the sustainable development of the Mediterranean have been published by governmental and non-governmental agencies.

The changes in climate, mostly induced by man's pollution of the atmosphere, have led to the reappearance of pathological health vectors, causing increased distribution of malaria and Leishmania-bearing mosquitoes, cholera viruses, tuberculosis and enteric diseases. To mitigate such phenomena, strategies must be developed to limit and control our acute and unwise influence on the environment in order to prevent the release of forces that

may become uncontrollable. The "wait and see" approach so common today should be changed to "let's see what we can do". We must also recognize that, in addition to the pollution of industry, the ongoing growth of consumerism leads to unlimited exploitation of natural resources, both organic and inorganic. All these factors are organically coupled with the most important denominator – the almost uncontrolled population growth that in most instances follows the ancient dogma of "reproduce and multiply", one of the strongest beliefs in the various faiths. The preachers of these faiths should today understand that these ancient dogmas need to be modernized for the benefit of their followers and of global well-being. The blind following of religious rules established several millennia back in a very different world basically preclude the improvement of life standards, perpetuating into the future the dependence of billions on providers, with no end to illiteracy and poverty. Without a strong decline in population growth we will inevitably witness an increase in demands for goods and food, which industry and modern agriculture will be pressured to provide. The explosive and unhealthy growth of consumerism and, interconnected with this, the increasing prevalence of obesity in the modern society (so successfully encouraged by the financial machinery), should also become a target of the informed; and the active and knowledgeable participation of concerned scientists should be a part of this. As contended by Gibbons, "science has a social contract with society". It is relatively easy to show that a can of canned apples costs more energy in preparation and packaging than it provides. To make this job of enlightenment easier, education should include ethics and nature studies from the very beginning, from the kindergarten level up to the universities, and in all directions of professional specializations. Education should not only provide factual material, science, but also guide the young generation to an understanding of the problems of modern society and the duties of ethically concerned citizens to see natural assets as an inseparable part of humanity and its heritage. A sense of citizenship is indispensable for successful implementation of advanced ethical ideas. This approach to the duties

of education is especially important in our era of globalization. Cairns has posited *transdisciplinary education* as one of the tools to realize the ideas of sustainability. I would like to add *transboundary education* to this category, teaching ethical approaches to man and nature as a human unifying concept. The functioning organizations of the UN can establish an international committee of educators and an organization like the WHO, and thereby become initiators for the development of such programs for both elementary and high schools, and thereby form a common ground of knowledge for the ethics and nature of our future citizens.

Such education constitutes a time- and effort-consuming process; however, without it no worthwhile change in human attitude can be achieved.

With increasing recognition of this, it is now becoming vital to:

A. Place population growth within a reasonable frame of carrying capacity. Pragmatic planning, rather than emotion and whims, must steer the future of humankind. This must be done through education.

B. Thoughtful social and medical education should lead humankind to recognize consumption as a need, rather than a central goal of man. The amount of wasted energy is currently greatly overwhelming the ability of our planet to replenish it.

C. Global resources, such as land, water and minerals, should be used and dealt with cautiously. We are entitled to use, but not to abuse. For this to be realized, both capital and thinking should be directed toward inventions that will substitute the limited natural resources and at last partly free man from dependence on them.

D. Immediate improvement of techniques to deal with air pollution should be put on the agenda, not

just by simple declarations but as an urgent necessity. The cost of this ongoing pollution in human health is enormous.

E. The reduction of poverty on a global scale must be seen as a central goal, and as the primary task of those nations more advanced in wealth and development. Without this, the sustainable existence of humanity and ethical relations with the environment will be unachievable. A wide transfer of know-how should take place from more advanced to less advanced countries, both regarding production and socio-economics.

Ecology is not a simple collection of models and mathematical formulations. By including ethics and social sciences within such formulations, ecology becomes **the science of life** and as such must include the biological, social, emotional, political and physical areas of life, even if some of these are not recognized as “strictly scientific”.

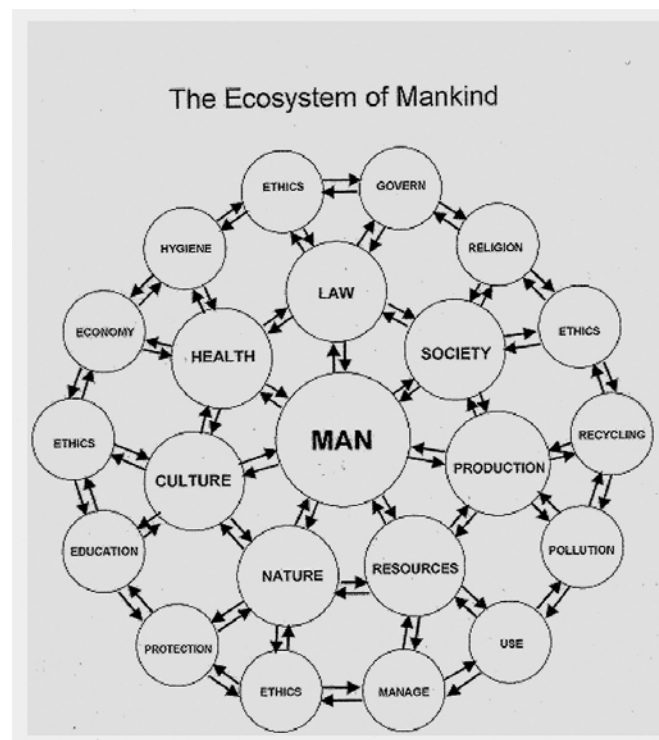


Fig. 1. The Ecosystem of Mankind. The bound between ecosystems, social systems, and ethics