

THE RUSH FOR PROFIT AND THE ETHICS OF SURVIVAL

[Professor Dusan T. Kanazir](#)

f. President
Serbian Academy of Sciences and Arts
Yugoslavia

The future of the human species and life on our planet seems to be in question because of air, land and water pollution. This is due to a tremendous degradation and destruction of the environment, ecosystems and life. It is also due to demographic explosions and starvation, as well as to an increased rate and accumulation of harmful mutations and genetic damage in the human population and other living organisms, affecting human physical and mental health.

The moral issues and questions of responsibility arise only when new technological applications are applied or with the accumulation of new knowledge or when decisions are to be made. Therefore, the responsibility of multinational companies and scientists and the unpredictable consequences of science application and technology have become the "Sorcerer's Apprentice" of our age; these are the greatest dilemmas of our civilisation. The rush for profit has been the factor most responsible for changing the world and destroying the environment, the ecosystem and the human soul.

The most serious obstacle on the road to further development of the present civilisation, and of ethical values and humanism, is the division of the present world into two irreconcilable camps: one is represented by very rapidly technologically and culturally developing nations and the other one by under-and-non-developed countries living in scientific, technological and cultural backwardness, as well as, in economic and social misery. The globe is not integrated; more than 50% of the human population is starving or dying from hunger, and remains illiterate. The world, as a whole, faces acute problems such as social conflicts, environmental pollution, waste of natural resources, recessions, political and military threats, local wars, organised crime and terrorism. The drama of contemporary civilisation is the result of a deep moral crisis, of religious and ideological differences and of the misuse of power, knowledge and technology.

Bio-Environment and Economy

The life-supporting environment provides the biophysical necessities of life, namely, food energy, mineral nutrients, air and water. The life-supporting ecosystem is the functional term for the environment, organisms, processes and resources interacting to provide these physical necessities. Renewable natural capital is generated by the continuous interactions between organisms, populations, communities and their physical environment. Species are part of the ecosystem contributing to the production and sustenance of renewable natural capital. For any type of renewable natural capital to be sustained, a minimum number of species is required to develop the cyclic relations between producers, consumers and decomposers. These cyclic relations in synergy, with the environmental conditions at hand, will continuously develop and evolve the structure of the ecosystem. The structure and processes of the ecosystem have to be intact and functioning, in order for it to qualify as renewable natural capital. This, the ecosystem life-support, is the primary value of the environment and biological species are crucial parts of it. Renewable resources and ecological services are secondary values and, by definition, would not be there without the primary values of the ecosystems' basic existence. Since humans, and our societies are subsystems of the ecosphere, we are fundamentally dependent on the primary value of the environment. However, valuation of the environment has primarily dealt with secondary values and, at least so far, with only a minor part of these values. In addition, these secondary values are often taken out of their context in the environmental economic system.

Environmental economists speak of natural, human or cultural, and manufactured capital, when categorising the different kinds of stocks that produce the range of environmental and economic goods and services used by the human economy. Environmental scientists argue that natural capital and human-made capital are largely complements, rather than substitutes, and that natural capital is increasingly becoming the limiting factor for further development. Therefore, in order to sustain a stream of income, the natural capital stock must be maintained. Technological progress should be efficiency increasing rather than throughout increasing; harvesting rates of renewable natural resources should not exceed regeneration rates; waste emissions should not exceed the assimilative capacity of the environment; and non-renewable resources may be exploited, but at a rate equal to the creation of renewable substitutes.

In the context of biological conservation and human welfare, the major challenge from this perspective is to maintain the amount of biodiversity that will ensure the resilience of ecosystems and, thereby, the flow of crucial renewable resources and environmental services to human societies. This does not mean that neither ethical and moral concerns for biodiversity conservation, nor the preference of humans for particular species, without information as to their role in the system, is of no importance. On the contrary, this hierarchy of values has to be explicitly stressed in discussions of biodiversity conservation and sustainable development.

Bioethical Issues

The tragedy of humankind is that it does not know its long-term future, what world our children and grandchildren will live in, what is the fate of humankind, or how long it will last.

Our civilisation is driven by short-term goals, by every day requirements for higher and higher profits. But, their fulfilment, especially in our times, raises several essential questions: Can the present way of life be further pursued? Who is making decisions on behalf of humankind; are those the institutions of UN? Who is taking care of life, biodiversity and ecological habitats? Do we know what world we want and how to build a better civilisation? The crucial question is whether the "market economy" of our days is the best, since, it is governed by short-term appreciation of knowledge and technologies. To ensure survival, we need biological realism, a global world policy on economy and long ranging global policy-thinking and policy-planning for the further economical evolution of our civilisation. However, caution should be applied so that false economic assumptions and actions do not lead us into evil.

Long-term thinking and a global vision, of our future, may help us remedy and overcome the consequences of our short-range actions that have caused destruction of the bio-environment. The problems we are faced with are complex and, for some, no solutions exist. There is much more poverty now than ever before, even in the richest countries.

The survival of humankind and the preservation and evolution of the bio-environment require the application of new sophisticated techniques, in order to remedy anthropogenic environmental alterations. Do we have the highest techno-logical solution for "global warming" or carbon dioxide overload? Do we know how to control the growth of human population? Very soon we will face the problem of switching from fossil to non fossil fuels and to renewable energy sources; are we ready to do it? This would mean a radical transformation of our civilisation. Are we ready to solve all these global problems? Certainly not at present since, solving these problems requires global co-operation and bio-policy. In this area, we are lacking.

The survival of our planet, where all natural "bio-laws" are deregulated by pollution, requires intensive and scientifically grounded care, global care-taking; a therapy that will, however, not compromise the present economy. This necessitates the development of a system of bioethics, based on new scientific knowledge and ethical principles, acceptable to all ethnic, religious and cultural groups. Can the entire world, at the present levels of cultural development of various nations, agree on this as its main goal?

Answers to these questions will determine the strategy for the future of humankind. Achieving this goal implies that different ethnic, religious and cultural groups have to be tolerant, co-operative, altruistic and ready to even change their lifestyle.

My feeling is that this world-wide goal for survival is anti-biological and unachievable, due to the genetic make-up of the human species. The enemy is within us. My belief is that the actual world situation is showing the signs of danger of extinction and collective suicide. We have to plan how to avoid suicide and extinction. Survival is an ethical problem; what do we have to do to assure acceptable survival?

There is the need to constantly keep in mind the problems of translating the bio-sciences into policy of economics. The danger is using a cost/benefit analysis without, or with a scarce knowledge on biodiversity and genetics. Ecosystem functions and other values of biodiversity cannot be treated by cost/benefit principles, nor traded in markets as commodities. Under-evaluation of their importance may have very harmful consequences and ethical impacts. Biodiversity and bio-conservation are important ethical problems for our civilisation. Conservation biology and saving the earth, as we know it, for future generations, wants to make sure that humans survive forever. We have to resort to new methods of evaluation.

The problems of assigning values to biodiversity are numerous, since the evaluation is based on contingent valuation methods. There are cognition problems, due to cognitive restrictions and the difficulty of observing and weighing attributes, as well as, incongruity problems, since different characteristics of the system may be incommensurable, which make it difficult to map all the characteristics of products and their economic values.

It is perhaps very useful to assign economic value on biodiversity but we have to constantly keep its limitations in mind. We make all kinds of moral commitments in our lives that have little to do with economic utility and we, in biology and bio-environmental science, constantly question how the "market economy" shapes the destiny of our civilisation and affects the survival of humankind.

All the data, up to the present, clearly shows that we have not enough evidence for determining the economic value of ecosystem processes or of endangered species. This would only mean that more support for research is needed for bio-environmental and environmental research programs. New approaches to the preservation of the environment, based on new biological knowledge and technologies, are likely to emerge in the next ten to twenty years.

A Remedy for the Environment

First of all, we have to use new knowledge and sophisticated methods in order to remedy human induced environmental alterations. Currently, new perspectives in geotherapy are emerging. Major trends in scientific thinking include:

- maintaining the basic life support systems and ecosystems
- enlarging the range of choices in resource management
- refining methods of risk assessment
- streamlining methods for monitoring environmental change
- increasing efforts to examine environments within holistic frameworks

The health of the land and associated plants, animals and ecosystems is fundamental to understanding the interactions that affect the net ability of the land to support life and biodiversity.

Handling resource problems is very slowly moving away from single purpose to multi purpose programs, especially in relation to water and land management. The risks and profits have to be presented in public prior to decision and policy making. In these decisions, usually cost/benefit analysis is used but, long-term impact on ecosystems biodiversity and on quality of human life is underestimated and neglected. The divergence is nowhere more extreme than in the realm of energy options where the estimated risk/benefit analysis used in comparing coal and nuclear energy, not only divided the experts, but provoked strong public responses. It is evident today that the methods of risk assessment and data interpretation should be significantly improved, and, for this, wide-range scientific investigations are needed. Erroneous economic assumptions and decisions are the root of all evil.

Genetic Engineering as a Choice for Preserving the Bio-Environment

Genetic engineering, in my opinion, is, at present, one of the best methods for saving the environment and increasing world food production. With genetic engineering, it will be possible to accelerate plant breeding and confer traits such as resistance to insects, fungi, bacteria, viruses and nematodes. The results will be the decreased dependence on agricultural chemicals and an increased emphasis on disease prevention and preservation of the bio-environment.

An increased tolerance in plants would enhance productivity on existing farm land and enable poorer land to be cultivated for the first time. Controlling plant protein synthesis and storage systems could lead to the improvement of the nutritional quality of seed grains. This may significantly affect nutrition in developing countries. By controlling the function of plant-growth regulatory genes, planting and harvesting cycles can be altered, permitting growth of more than one crop without applying agricultural chemicals. Hybridising major crops, such as wheat, soybeans, and rice will result in hybrid vigour that could increase world crop yields significantly.

Ultimately, through genetic engineering, plants may even be led to produce raw materials for the chemical industry such as latex from rubber plants, oil from palms, starch from corn and other crops, sugar from sugar cane, cellulose and lignin from trees. All of these principal chemicals derive from agriculture. It is evident that a great variety of environmental problems, including the problems of preserving biodiversity through genetic banks, can be solved by this method.

Global Care for the Bio-Environment and Global Bioethics

Our goal is a healthy planet in equilibrium, with respect to the economy, consumption and production of resources. This implies a balanced biosphere and a manageable size of human population. Do we have measures, solutions and organisations for adequately solving all of the global problems?

To achieve this global goal, the world needs the existence of an organisation or a network of organisations, such as, a World Council for Environment and Bioethics. My proposal is that the Biopolitical International Organisation in Athens, headed by Dr. Agni Vlavianos-Arvanitis, its President and Founder, should be the nucleus of this proposed World Organisation. Knowing her enthusiasm, creativity, productivity as well as her organising abilities, my feeling is that Dr. Vlavianos-Arvanitis would fulfil this task with success.

The proposed World Organisation should prepare and develop a global strategy for the survival of humankind, which is so urgent today. Science and new technologies should form the basis of this strategy, which will be grounded on global bioethics and global applications. It is time to seek a global philosophy and global bioethics to guide further evolution of the world. The goal of this conference might be to support all efforts in order to arrive at this stage.

References

1. Arvanitis-Vlavianos A. (1993) Bios in the next millennium-reversing the crisis of values, in *Biopolitics the Bio-Environment*, A. Vlavianos-Arvanitis and Rusen Keles eds, Vol. IV, pp. 18-28. Biopolitics International Organisation, Athens.
2. Cleveland, C.J. (1991) Natural resource scarcity and economic growth revisited: economic and biophysical perspectives. In *Ecological Economics: The Science and Management of Sustainability*, ed. R. Costanza, New York: Columbia Univ. Press.
3. Costanza, R. and Daly, H.E. (1992) Natural capital and sustainable development. *Conservation Biology* 6: 37-46.
4. Costanza R., Wainger L., Folke C., and Maker K.G (1993) Modelling complex ecological economic systems: toward an evolutionary, dynamic understanding of people and nature. *BioScience* 43: 545-555.
5. Common, M. and Perrings, C. (1992) Towards an ecological economics of sustain-ability. *Ecological Economics* 6: 7-34.
6. *Common Sense in the Environment*, Scientific Panel of U.S. National Research Council (1991) *Nature* 353: 779.
7. Davis, D.B. (1980) *Frontiers of Biological Science*, p. 78.
8. *Genetics, Ethics and Human Values*, XXIVth CIOMS, Council for International Organisations of Medical Sciences, Tokyo, 1990.
9. Grantham, R. (1992) Geotherapy and global bioethics: Towards acceptable survival. *Global Environmental Change* 2: 258-261.
10. Grantham, R. (1992) Geotherapy as an evolutionary choice. *Global Environmental Change* 2: 2-4.
11. de Groot, R.S. (1992) *Functions of Nature: Evaluation of Nature in Environmental Planning, Management and Decision-Making*. Groningen The Netherlands: Wolters-Noordoff BV.
12. Kanazir, D.T. (1991) Environment, survival and bioethics - the drama of contemporary civilisation, in *Biopolitics - The Bio-Environment - Volume III*, pp. 564-570, Agni Vlavianos-Arvanitis, ed., Biopolitics International Organisation, Athens.
13. National Academy of Sciences, National Research Council Committee on Nuclear and Alternative Energy Systems. *Energy in Transition 1985-2010, Final Report*. Freeman, San Francisco, 1979.
14. Sharp, M. and Shackley, S. (1991) Degradation of Regulation, *Nature* 353: 711.
15. White, F.G. (1991) *Environment in Science*, pp. 133.

Professor Dusan Kanazir, former President of the Serbian Academy of Sciences and Arts, and former Minister of Science and Technology for the Government of the Republic of Serbia, studied medicine in Paris and received a Ph.D. in physiological sciences from Universit? Libre de Bruxelles. He has been Professor of Biochemistry on the Faculty of Sciences at Belgrade University and Scientific Counsellor at the Boris Kidric Institute. He has taught in the USA, Japan, Belgium and Argentina, and has been inducted in numerous learned societies, academies and boards. Appointed Commandeur de la L?gion d'Honneur by the French government, Professor Kanazir has also earned the Decoration of Merit for the Yugoslav Peoples – Gold Star – the Plaque of the Institute for Nuclear Energy Application in Agriculture, Veterinary Science and Forestry, and the Decoration for Work – Red Flag – on two occasions.