

## MAN AND ENVIRONMENT

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#### MOTTO : AN HOUR

*Leaves glowing in the sun, zealous hum of bumble bees,  
From afar, from somewhere beyond the river,  
echoes of lingering voices,  
And the unhurried sounds of a hammer gave joy not only to me.  
Before the five senses were opened, and earlier than any beginning  
They waited, ready, for all those who would call themselves mortals,  
So that they might praise, as I do, LIFE, that is, happiness.*

Czeslaw Milosz  
Nobel Prize Winner, 1981

Every year there are more and more meetings for the protection of the Human Environment accompanied by an increasing number of publications. The production of these papers contributes more to the destruction of forests than to their protection. This situation seems to be one of the tragic paradoxes of our civilization, that the acceleration of progress leads to the simultaneous deterioration of the quality of environment on a global scale. No mentally healthy person wants to commit suicide. So no-one, whether a layman or someone involved in decision-making, is against the protection of our common, natural environment. One question arises in this situation, namely, what is the main reason for this great alienation of our civilization?

Many people explain that a low environmental quality is the cost one must pay for a higher standard of living, as a result of the side-effects of technological progress. This decrease of utilized land quality is not a new phenomenon connected only with the contemporary progress of industrialization. In fact the whole history of our European civilization originating from the Mediterranean is accompanied by deforestation, soil erosion and degradation of the natural environment in Mesopotamia, Greece, Italy, etc.. Technological progress is only a new tool of man, following the behavioral stereotype of his ancestors. The main cause of this behavior is some kind of competition in minimizing production costs and obtaining still more and more goods, according to the model of unlimited consumption. There are worsening implications of this behavior not only with respect to interpersonal relationships, but also for the occurrence of the deterioration of both human and natural values; it is a point for reflection about the sociosphere and biosphere, as well. People involved in stronger and stronger competition for only material goods, in many cases not necessarily goods for well-being, lose both human dignity and solidarity with other human beings.

Technological development dramatically increased the scale of deterioration of the natural environment in space and time. Industrialization is accompanied by chemical and radioactive pollution of the air, water and food chains, as well as by a permanent increase in noise level and generation of strong electromagnetic fields. We are continuously learning about new and irreversible biological effects of environmental pollutants. Only recently we were shocked by the death of seals in the North Sea region, no expert was able to predict this ecological disaster.

This reminds me of a situation in Japan. In the early 1950s, in the Minamata Bay region, many cats began to die within a short space of time. No-one tried to explain the reason for the strange behavior and subsequent death of these animals. A few years later the first symptoms of a new "Minamata disease" appeared among the people living in the same area. There were thousands of victims of this incurable disease. Doctors could not treat the people intoxicated by food contaminated with a high amount of methyl mercury. Still, it would have been possible to prevent this terrible situation. An interdisciplinary 'case-study', concerning the cause of death of a large number of cats, could have been done, along with the cooperation of scientists, decision-makers and technicians demonstrating how to protect the natural environment against industrial pollution from mercury compounds. The history of Itai-itai, Yokkaichi asthma and some other new 'diseases of civilization' is rather similar. Ecologically-oriented, cross-disciplinary studies are necessary for successful prevention of irreversible pathological changes in many human bodies, caused by an excess of critical levels of certain pollutants.

Every year there are many hundreds of thousands of premature deaths due to lack of cooperation among experts in very distinct fields of study, transfer of up-to-date knowledge to authorities, and a lack of imagination and responsibility of many decision makers.

It is a common conviction that processes of industrialization and urbanization are stimulating for socio-economic development. This opinion is

especially popular in some of the developing countries. In reality it is a rather different situation. The above-mentioned processes are accompanied by a deterioration of agriculture and living conditions of many people followed by a decrease in the quality of public health as a result of environment pollution and food contamination. According to epidemiological data in eastern European countries, the frequency of diseases dependent on environmental pollutants is increasing and consequently the life-span of inhabitants has been decreasing over the last several years to a significant degree, Hungary and Poland in particular. There are also some other risk factors to the natural environment and human health.

Highly industrialized countries try to deposit the most dangerous radioactive or toxic wastes outside their borders, as well as offering out-dated technologies to developing countries. There are different kinds of economic pressures on governments of deeply-in-debt countries for giving permission for the storage of these wastes. Traditional technologies are recommended as relatively cheap. Due to the lack of ecological knowledge or ethic-free behavior, decision makers ignore the fact that these technologies have many side-effects on the environment. In fact, there are no cheap ones. Cost-benefit macroscale analysis leads to quite the opposite conclusion. These technologies are not only inhuman, but are also unreasonable in relation to regional and national economies (if calculations are based on system analysis of all the possible impacts and on the quality and use of natural resources in the future). I believe that we would be very glad to learn of decision makers who think of the needs of future generations, rather than spectacular effects of economical task-solving good for publicity and possibly for their election in the coming years. The short-term point of view is typical for many businessmen and politicians, but fortunately there are more and more exceptions. In fact this rather traditional point of view is supported by reduction in science, and constantly narrowing specializations, as well as dehumanization of techniques. Technocratic approaches to economical growth are possible only because technicians, engineers and other practitioners are not interested in changing their activities in relation to the environment. Scientists are asked, as a rule, to make expert judgements about new projects only if it is proper from a formal point of view. Industrial lobbyists are interested only in technological and economical analysis of projects.

No juridical regulations are perfect, even in high technology countries, and businessmen are able to avoid direct conflict with the law, thus an output from industrial centers suffices. Unfortunately, many decision-makers still recognize protection of the environment as being in conflict with economical growth, and industrialization in particular. They believe that increases in costs of production due to air, water and land protection, cut down financial income in the production and distribution of goods. Therefore, they would like to convince the public that reduction of these costs is good for the common people, due to increasing the possibility of buying more for lower prices. This way of thinking was a main reason for the appearance of the terrible diseases of civilization in Japan and other industrialized countries.

The situation is even worse in developing countries as their inhabitants are simultaneously victims of both poverty and accelerated progress of pollution and desertification of still larger and larger areas. Over-exploitation of forest and other resources of nature is typical of poor and economically dependent countries.

Complex studies about the different aspects of ecological input of technocratic 'progress' based on the constantly extending utilization of limited resources (including ecological research and improvement of knowledge about resistance of present and future generations to environmental pollutants) requires big financial support. Large companies and industrial lobbyists are disposers of such funds, but they are not interested in learning about the real situation. Of course, local inhabitants would like to know the truth about ecological disasters and connected health hazards. They have neither the money nor the technical possibilities to conduct the necessary studies. This situation might be recognized as hopeless 'circulum vitiosis'. However, let us be optimistic. In fact protection of the indivisible, natural environment is necessary for protection of the health of both producers and consumers of all kinds of goods. With an improving ecological knowledge and common perception of the relationship between the quality of the environment and the quality of life, we could hope for a more efficacious protection of the common environment. We have no time to lose. Cooperation of local inhabitants, decision-makers and scientists must be better programmed and integrated. It is important for all of us, but it is a much more important and 'crucial' problem for youth. The ethical aspects of the behavior of older people as decision makers are a key factor for such cooperation towards a better environment in the future. Decentralization and democratization of decisions is also indispensable for higher efficacy for the protection of the natural environment both on a local and global scale.

These processes should be supplemented by the ecologically-oriented progress ethics, socio-technology and biotechnology, based on the forecasting of future needs, both in relation to the protection of natural resources and the natural environment necessary for well-being and good health. A better sense of common responsibility about the common environment is important. Other aspects connected with efficacy of our efforts towards a more 'human' environment are connected with stimulating the development of low-energy, 'clean' technologies and an increase in the level of ecological and technological culture. The Biosphere has been recognized as a highly integrated bio-cybernetic system. Therefore we must take into consideration the long-term effects of our present activities. A new philosophy of relations between man and other elements of nature is required. I believe that the contribution to creation of such philosophers as Copernicus, showing the real place of the Earth in the Universe; Teilhard de Cha with his concept of the general tendency of spiritual evolution of human beings against the background of the evolution of the whole Universe; as well as Dobzhansky and his evolution transcendence of physico-organic cultural dimensions; or Monod stressing the role of accident and necessity in relation to phylogenic development; and Shibuya taking into consideration some kind of extrapolation evolutionary principles on tendency in development of contemporary civilization, (not to mention many others) is very important. I agree with Haras about our mission to create a new human environment, with a deep sense of admiration for the mystery of life as well as obedience to the severe decrees of nature, with the courage not only to innovate, but also to respect and protect

the heritage and wisdom of mankind. Let us learn more from nature for the benefit of all people and of future generations in particular. The future of our species depends on the balance of technology and humanity in relation to the feedback between protection of the homeostasis of the whole Biosphere, and homeostasis on a personal level.

Let me quote Reichardt's ethical postulates, which seem to be reasonable as a guideline for environmental legislation:

1. Fulfillment for a great number of people
2. No suffering for living beings
3. A hierarchical evolution between species: The life of a human being is valued higher than that of an animal (N.B. I believe that this is open for discussion in relation to the deep ecology concept)
4. No irreversible interferences in the environment
5. The highest possible degree of diversification of species and individuals should be maintained.

I believe we ought to think about the last recommendation in light of the background of our experiences in gen-tech green revolution, banks of genes, reserves of the biosphere and international cooperation for the protection of nature and biotechnological aspects of this activity.

Because of ethical and ecological dimensions, it should be underlined that financial support of international and local organizations was not utilized properly in such countries. In some of them, part of this money was utilized in other ways than was intended by the benefactors. The main reason for the improper use of funds is lack of an expert staff, trained in interdisciplinary 'case studies'. These studies should include estimation of reasons and degree of land deterioration, prodigality of natural resources, as well as realistic programs of improvement of environmental quality by application of an ecodevelopment concept and introduction of alternative 'clean technologies'.

For the benefit of all inhabitants of developing countries and the international community, all kinds of financial help (including the assistance of the Agency for Development, sponsored by the World Bank) should be supplemented by the training of experts which would be adequate to the real needs of these countries - in a systematic approach, for environmental management, new technology and good ecodevelopment. In practice this is not so easy to do, due to the very traditional systems of university education. It can generally be stated that within the system of education narrower and narrower specialization is preferred leading to the increase of a redundancy of non-applicable information, as well as to an increase in technical equipment not useful in solving life problems of developing countries. This does not constitute an argument in favor of stopping scientific research, but rather of channeling it in the proper direction. The proper direction in this case means problem-oriented interdisciplinary 'case studies'. This recommendation is supported by the history of the deterioration of our milieu. Experiences of the industrial period have confirmed the righteousness of Pawlikowski's statement that protection of the environment should accompany every human activity. Undoubtedly, this is linked to the great problems of the present day, such as the provision of food, water and energy for the rapid growth of mankind and with securing peace on our planet.

Unfortunately, even in the most advanced university centers, training students in interdisciplinary studies about the human environment is very rare. It seems to be a rather paradoxical situation, today cross-disciplinary cooperation is becoming necessary both for basic and applied studies. Modernization of educational systems is even more important for better use of the very limited resources of developing countries. A systematic approach to the human environment and the use of natural resources, are recommended for the efficacious prevention of further deterioration of the natural environment and the increase of risk factors to the public health, related to direct, or frequently, indirect toxification. There is a need to exchange information between engineers, naturalists, economists, lawyers, teachers and many others and to encourage their practical cooperation in this field.

In Poland in 1968 and 1972, international instructive research camps were initiated nationwide; their aim being both interdisciplinary 'case studies' of the state of the environment, and identification of the most important causes of its deterioration. The camps were located at places of especially high natural value in different regions of the country (including the oldest European border-parks). Their aim was not only to make a complex record of the existing state of the natural environment, but to prepare concrete materials, sometimes even designs, to ameliorate the situation. These local actions were linked with discussions on environmental problems of general occurrence and their many aspects. This produced an opportunity, not only for outdoor cooperation among students of various specializations and universities, but also for uniting with local people in proposing solutions to their practical problems and cooperation with decision makers and politicians for solving more important problems. Later, these student camps and schools for scholars became a place for an international exchange of methodological experiences about similar environmental and educational problems. According to the scale of possibilities of this voluntary action, what was actualized during these seminars and field studies, was the rule 'think globally - act locally'.

Completing the research work, it was proposed to develop such forms of economic activity which would not collide with the requirements of protecting the natural environment, e.g. in the region of the national parks. This assumption coincides with the concept of ecodevelopment, worked out by UNEP. It was recognized as a moral duty to do the best for the improvement of environmental quality and helping people in areas under investigation. Field studies were problem-oriented, e.g. side-effects of mass tourism in protected areas and complex action for minimalization of negative effects by proper localization of transport infrastructure; touristic shelters; introduction of effective biological plants for cleaning waste water; increase of ecological culture; agricultural activity; sanitary conditions and health hazards for the inhabitants of villages by recommendation of biological farming; cultivation of vegetables and herbs in unpolluted areas, application of economical,

modern systems of bee-keeping, oriented towards making many different healthy products related to local tradition and verified by scientific medical study, to mention only a few examples.

Experiences related to the aforementioned complex activities, seem to be really helpful for many southern countries, both in aspects of ecodevelopment (even of semi-desert areas), and the prevention of some diseases like common iron-deficiency anemia (by supplementation of food with herbs, honey and pollen). This example illustrates the coincidence of traditional usage of medical plants and new 'Apipol's' system of bee-keeping in non-polluted areas. This kind of cooperation may also be beneficial for inhabitants of developed countries by introducing new natural products based on biotechnology and not existing in these countries' herbariums. Some of these plant extracts are very effective in the treatment of diseases relating to the deterioration of the natural environment like bronchitis, asthma, anxiety, sleeplessness, diabetes, etc..

Inhabitants of highly industrialized countries could also learn a lot from the inhabitants of developing countries about proper respect for nature and harmonious co-existence over a long period of time. There are many common and global problems requiring cooperation, based on interdisciplinary studies and computer networks with information about methods of solving these problems. Therefore, at the World Conference on Environmental Education in Tokyo, 1985, my idea to establish the World Center of Environmental Information and Training in connection with UNU was approved. Japanese experts have a keen interest in the development of interdisciplinary studies towards the protection of the human environment, because of their experiences with 'diseases of civilization'. Professor Dr. Y. Fukushima, the main organizer of the International Conferences on the Improvement of the Human Environment in Kyoto, 1973, as well as the above-mentioned conference, stressed the special responsibility of scientists to study the total environment and to inform society about risk factors in advance.

Fukushima stated, in one of his papers, that "to meet the needs of the people who are suffering from environmental disruption, we must choose projects not in laboratories, but among the daily lives of citizens. Scientists and technicians must find their solutions to the environmental deterioration based on the real experiences of lower level schools. Also required is a fundamental change in thinking. These tasks are not only the responsibility of scientists. People, themselves, both young and old, must undertake the tackling of problems positively as their own responsibility, based on holistic environmental education. New concepts of life and respect for life should be broadened to include more than the physical or biological fields. The materials used in our daily lives, food, clothes and dwellings, all originated from life. Even fossil fuels are no exception."

I would like to see an International Conference on "New Trends in Environmental Education inside and outside of the University" held in Poland during the summer vacation of 1989. Let us hope to develop international cooperation for an environment of better quality for younger generations. The forecasting of economic and ecological problems should constitute a premise for such training of specialists that they can, in advance, take appropriate action in the sphere of technology. This also requires the educating of so-called 'environmental generalists' capable of integrating the knowledge of various scientific disciplines and producing solutions for basic problems linked to the existence of the human species. There are many ethical, economic and political problems in the transition to a just, participatory and sustainable society on the global scale which would be responsible to the biosphere and even life in outer space.

Educated people and high-quality experts can make special contributions to the future passengers of the "resources limited" space-craft called Earth. I believe that we may be rather optimistic when we see the increasing interest of youth towards a better utilization of the progress of science and technology for the benefit of all people, based on ethical imperatives. Still, there is an open question about time in relation to the deterioration of environmental quality and the resistance of Homo sapiens against mutagenic, teratogenic, carcinogenic and other environmental pathogens and the improvement necessary for this resistance. I think the ancient Greeks were right to stress the coincidence of beauty and good Kalojer kagaton. We have missed this idea in contemporary civilization, a so-called "civilization of coprophages" who destroy the living environment and cover more and more areas with toxic wastes, creating natural and artificial deserts. Pollution of the environment is connected with deterioration of the landscape, the health of present and future generations as well as prodigality of the natural resources. Let us emphasise the existing coinciding of ecological and economical requirements. We must not sacrifice environmental conditions for the protection of the cultural heritage, but first protect and cultivate all humanistic values, making human life reasonable. Therefore technologically advanced countries have to do their best to develop new technology (including biotechnology) to help developing countries in food and energy production, without further deterioration of the natural environment. Still, more and more young people would like to follow such heroes of our civilization, like Prometheus, St. Francis, Goethe, Schweizer, Mother Theresa, etc.. Fortunately ethical reasons are supported by ecological ones, namely the prediction of disaster on a global scale as a result of the progress of deforestation and pollution, destruction of the ozonosphere, etc.. According to Professor Dr. J. Aleksandrowicz, former Vice-President of the World Academy of Arts and Science, the ecological crisis displays a positive feedback effect with an ethical crisis. Every week, we as mankind, lose more and more human beings due to premature death, and at the same time we lose more and more species of plants and animals - our brothers and sisters, according both to St. Francis and contemporary deep ecology. The future of our species will or will not be bright - it depends on supplementing technical progress with ethical progress - it depends on each one of us.

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