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GEOGRAPHICAL VIEWPOINT

/ MAN AND HIS ENVIRONMENT¹

by

DOMINGO C. SALITA²

When I was invited by Vice-President Laus of your Society to be your resource speaker this afternoon, I felt deeply honored for I know that I will be in very good company. As I looked around, I can not fail to notice that the members of the Philippine Booklovers Society are widely read and well informed on all the branches of human learning. Your President, former Senator Imay Pecson who is internationally known as a scholar and civic-leader, is the inspiration of the Society. You are the examples of the true scholars who are lovers of wisdom as you keep on searching for truth and knowledge.

I have decided to share my views with you on a subject that I know little about — Man and His Environment. It is a subject that is often discussed in our daily newspapers as it affects the lives not only of the present but also of the generations yet unborn. It has been said that if one desires to know more about a subject he must have to teach it or discuss it publicly. So he will be forced to read more about it. In this connection it is pertinent to mention what Bishop Fulton Sheen said in his book entitled *Wit and Wisdom*: "If you copy any thing out of one book, it is plagiarism. If you copy any thing out of two books it is research. And if you copy it out of six books you are a professor."

In order not to fall under the category of a plagiarist, I have taken some of the sources of this paper from at least six different books and journals. Because of this, I have found several definitions of what

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² Dr. Salita is Professor of Geology and Geography, University of the Philippines.

constitute the environment. One author defines the environment as the unique skin of soil, water, air, mineral nutrients and other organisms that cover the otherwise undistinguished planet earth. Another writer defines the environment as constituting of the natural things that surround us which comprise the air, water, land, plants and animals and the energy coming from the sun. Still, another scholar defines the environment as the aggregate surrounding that influence the growth and development of the life of an individual or population, especially man. The most comprehensive definition, however, considers the human environment as including everything, whether natural or artificially made that is outside of the skin of man. This includes the physical, biological and socio-cultural environment. The physical and biological environment represent the natural systems while the socio-cultural comprises the man aspects of the surroundings. Even poverty is considered part of man's environment. Because of this broad concept, the study of the human environment intersects many disciplines and involves several branches of knowledge — the natural and social sciences as well as the humanities.

What then is the goal of environmental education? The goal of environmental education is to develop a population that is aware of and concerned about the environment and its associated problems and which has the knowledge, skills, attitudes, motivations and commitments to work individually and collectively toward the solutions of current problems and the prevention of new ones.

In the Philippines which is fast approaching an agro-industrial economy, the study of the environment has acquired a very significant role. It is observed that much of the damage to the quality of the environment and to our natural resources can be attributed to ignorance, and because of this the impetus of the movement in environmental studies is getting an accelerated momentum in our country. In response to this demand, in 1973 during my incumbency as Dean, the College of Arts and Sciences of the University of the Philippines instituted the first doctoral program in Asia leading to a Ph.D. in environmental science. This was inspired by the Stockholm Conference in 1972 which focused world wide attention on the human environment. Our program is intended to provide teachers, scientists, researchers and leaders with knowledge in the proper understanding, conservation, utilization and management of our environment. In 1974 the National Science Development Board and the U.S. National Academy of Sciences sponsored a workshop in Manila in education and training needs of the Philippine environmental program. The workshop underscored the importance of education and training in solving environmental problems and recommended that environmental studies be introduced in the elementary, secondary and tertiary levels of education. The contemplated reform

in the educational program is central to the promotion of a new socio-economic order. The basic cause of our environmental woes is man's lack of ecological sensitivity. Unless the youth receives a new kind of education that is ecologically oriented and until the environment is regarded as a responsibility rather than an economic opportunity, the programs and approaches to economic development will only be a short term palliative. The heated debate going on between economic development and the maintenance of an acceptable environmental quality will only slow down the progress of mankind until man can become aware of his fellow organisms and the correspondence between their well-being and his own. Education moulds human values and this makes man more keenly interested not only in his own survival but also in the society where he lives.

Man is the central focus in environmental study for man is responsible for modifying, altering, destroying or conserving his environment. The scientist tells us that early man has evolved to conform with his environment. He was then a captive of his surroundings. Many biological adaptations and changes have taken place ever since man had learned to produce fire and to fashion the tools that will serve his needs. More recently the use of science and technology in place of physical adaptation has made it possible for man to insulate himself from the effects of the natural world by creating artificial environment. Today, man can occupy an incredible variety of ecological conditions without necessity of any structural change in his body. Thus, he can fly to the atmosphere and reach the outer space without developing wings. He can swim under the bottom of the sea without developing gills or fins. We can not however, elude the environment, for even our insulations have had their effects. Consider for example the effects on our health on the much use of motor vehicles with the resulting lack of exercise; consider the incidence of respiratory diseases including cancer due to pollution of the air, water and land which are caused by the wastes coming from factories, fertilizers and pesticides. The pollution of Pasig River, Tullahan River and the Manila Bay are but a few examples of the adverse effects of the improper disposal of the wastes coming from the nearby factories.

Each advance in man's actual evolution seems to have had a greater impact on his environment than the previous ones. As hunting and gathering gave way to herding, agriculture, industrialization and increased technological complexity, man seemed to lose touch with the magnitude of the effects on the natural environment.

Technology is the application of the laws of science to practical problems, frequently involving dexterity and exacting engineering skills. Technology is cautiously being improved and developed to serve the needs,

comfort, convenience and happiness of man. But in the process we disturb the balance of nature. We should not approach the problem of solving the material needs of man by considering only what is economically and technologically feasible. We should also consider the impacts of the products of technology on the environment. Can you imagine what is happening with the indiscriminate cutting of our forests? More floods, landslides, and rapid erosion of our rich soil are some of the adverse effects.

Basic to the study of the complex relationship of man and his environment is the relation between population and the earth resources. Geographers tell us that population is continually growing at an exponential rate while the size of the earth and its capacity to support human beings are limited.

We do not have substantial historical data on which to base estimates of population before 1650. It is thought that the human population at the time of Christ was about 250 million people and that it has doubled to 500 million in 1650. After 200 years the population doubled to 1 billion in 1850. The population again doubled to 2 billion in 1930 after the lapse of 80 years. The growth of population is exponential. The doubling period becomes shorter and shorter. If the present world population growth continues at 2% annually the doubling period is only 35 years and by 2000 the world population will be about 7.0 billion.

In the Philippines, at the time of the coming of the Spaniards, our population was estimated to be half a million. Today with our population of 42 million it is clear that the population has increased by 84 times. At the rate we are growing our population will double by 2000 which will reach 84 million. The size of the Philippines has, however, remained the same, 30 million hectares. This will mean increased pressure on the land. The rapid increase in population is due to increase in the longevity of life, a high birth rate and a reduction in death rate. These were made possible because of our improved knowledge in health and medical sciences. What are the consequences of this rapid growth of population? It means more mouths to be fed, more schools, houses, hospitals and other facilities to be constructed and more opportunities for employment and other comforts of life shall be provided. It means more consumption of energy, mineral resources, water, food and clothing which are finite. The power of the population to grow is definitely greater than the power of the earth to produce subsistence to meet man's needs.

Out of the total surface of the globe, about 70% is water and only 30% is dry land; 20% of this is too steep to be cultivated, 20% is too dry and 20% is covered with ice, so that only about 12% of the earth's surface is capable of being cultivated. With the present world population

tion there is only one hectare for every two persons that is available for cultivation. In the Philippines our arable land is estimated to be about 40% of our total land area. With a population of 42 million and an arable land of 12 million hectares, it follows that there are 3.5 persons dependent on every hectare of arable land. And if the population is doubled it means that 7 persons will be dependent for every hectare of cultivable land. How does this compare with the capacity of the land to produce? Has the yield increased as fast as the population? The answer is in the negative.

Some of the most serious land problems affecting land use arise from the competing uses of advantageously located lands. Many of our towns and cities arose from the center of our best agricultural lands, so that some of these valuable resources have been lost beneath highways, residential, commercial and industrial sites as the urban areas have spread. Look what is happening in Metro Manila. Many of the best agricultural lands were converted into subdivisions and other places of settlements. The green belts and the trees that are needed to maintain the ecological balance are no longer there. Congestion and the lack of adequate living space are the results. The uncontrolled rural-urban migration has complicated the problem. The air, water and land have become polluted endangering the health of the inhabitants. This is the price of urbanization, industrialization and population explosion.

A change in the attitudes of individuals and society is the key to population control and to many other measures necessary for the solution of the environmental crisis. In the Philippines some of our traditions such as considering the number of children as a measure of wealth shall give way in favor of a fewer number to enable the parents to give them the best that they can afford. Changes in our economic, social and political institutions are also essential. The colleges and universities which should be leading the way in education have been too conservative and too compartmentalized. Changes begin in the minds of men. It is time that we institute multi-disciplinary and interdisciplinary education that are problem oriented. The divisions between the physical, biological and social sciences as well as the humanities is only arbitrary. The physical and biological sciences have one thing in common. They both study nature. On the other hand, the study of the social sciences and the humanities have also one thing in common, that is the study of man. In a nutshell, all the branches of human knowledge can be reduced to the study of man and nature. Since man is also a part of nature and not apart from nature, it follows that there is unity of knowledge as truth is one and individual.

Perhaps the greatest potential for reversing the environmental deterioration and bringing population under control lies in the utilization of our legal system. A law may be defined as a "rule of conduct

for a community prescribed by a governing authority and enforced by sanction." Self-discipline and cooperation of the public is also vital. Thus a proper enforcement and observance of our laws governing forestry, fishery, mineral exploitation and prevention on the pollution of water, air and land would do well to conserve our resources and maintain a reasonable quality of the environment. Our laws on marriage should be amended so as to increase the legal age for changing status and to make family planning a compulsory undertaking. Under our present laws, a female can marry at 14 while a male at 16 years, with parental consent. We should discourage teenage marriages. It may be pointed out that P100.00 invested in population control is worth more than P1,000.00 invested in economic growth.

While legal and legislative actions are essential to the solution of population problems and minimize degradation of the environment, it is essential that industries and businessmen should be conscious of their duties to society so that they will take the initiative in cleaning up their effluents before they are discharged to the atmosphere and seas. Better still, the effluents must be treated and recycled so that they can be re-used in the process.

One way in which change in our economic system might be accomplished would be to develop a new economics of the environment. The UN Environmental Program calls this process ecological development or ecodevelopment, in short. It means that in considering the cost-benefit calculations, the destructive effects on the environment should also be taken into account as part of the cost. Industry should be required to abate pollution at the source. Man and Society must be protected. An environmental index should also be established to determine whether the country is more or less habitable from year to year. In this connection I call upon the members of the Philippine Booklovers Society to contribute their knowledge and insight in arousing public consciousness towards a better quality of the environment.

Finally, the question may now be asked: Is man an endangered species? Considering the rapid exploitation of the earth's resources and the pollution of water, air and land as well as the invention of the weapons of mass destruction through science and technology, there is no doubt that man is an endangered species. Can he survive the crisis? My answer is — it depends on man himself. Since science and technology have contributed not only to the comforts of man but also to the deterioration of the environment, it follows that it is also through the proper use of science and technology that man can maintain a reasonable quality of the environment for his own survival. In short, a man-made problem requires a man-made solution.