

**EDUCATION AND DEVELOPMENT
IN A
GREEN PERSPECTIVE**

Dissertation submitted to the Jawaharlal Nehru University
in partial fulfilment of the requirements for
the award of the Degree of
MASTER OF PHILOSOPHY

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1988



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5th of January, 1989

C E R T I F I C A T E



Certified that this dissertation entitled "Education and Development in a Green Perspective", by S. Mohanasundaram, has not been submitted for award of any degree to this or any other University. We recommend that this dissertation may be placed before the examiners for consideration of the award of the Degree of Master of Philosophy.

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A C K N O W L E D G E M E N T

I owe a deep debt of gratitude to my supervisor Prof. Narindar Singh who initiated me into this fascinating field of study. His unflagging help, constructive criticism as well as his moral support were instrumental in the completion of this dissertation.

I cannot ignore the help extended by Mr. Murali for his meticulous typing and timely help; and my teachers and friends who inspired me to carry out this work.

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Place: NEW DELHI.



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C H A P T E R - I

D I M E N S I O N S O F T H E P R E S E N T C R I S I S

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The story of the rise and fall of successive civilizations is the history of man on this planet. While some of these left few traces, some still surprise us with their magnificent ruins and enduring monuments. This has been a continuing story because some or other groups have been able to struggle and build up new civilizations, some of these surviving for many centuries. But the crisis that the contemporary civilization is facing threatens the existence of all life forms of the Earth. For it is for the first time ever that the entire human civilization faces the very real threat of complete extinction. Indeed, according to Flemming, 'for the first time we are compelled to envisage the end of human history itself'.¹

The present crisis is a complex and a multidimensional one which touches every aspect of the life of the individual, the society, the economy and the polity. The crisis basically manifests itself in two major forms. One is the threat of

1. D.F. Flemming, The Issues of Survival, London: George Allen & Unwin, 1972, p.18.

nuclear extinction and the other is the ongoing ecological vandalism. The following pages seek to show how both of these major forms of threat are the products of our own so-called 'developmental' activities over the years.

At the outset, it seems necessary to raise the following question: Is it possible to cope with the fundamental problems of mankind, particularly the problems of development conceived of in worldwide terms, as long as human societies are pitted against one another and humanity is faced with complete nuclear extinction?

Ever since the first atom bombs destroyed the two cities, Hiroshima and Nagasaki, the nature of war has changed. In addition to the increase in their quantity, the destructive capacity of modern nuclear weapons and of chemical and biological weapons is being perfected in sophisticated laboratories of military-industrial complexes. Although several million deaths in the countless wars of the past have not brought about our end as a species, it is now within human capacity to

accomplish this 'task' through a large scale nuclear war. As the extreme example to date, World War II, with its estimated 51 million deaths, claimed about 2 per cent of the world population of the time, that is twice the annual population increment of that period.²

Not only due to wars are hundreds of thousands of people killed and properties destroyed, but even without a war, millions of human lives are facing silent death due to hunger and poverty related diseases. This is primarily because of the pre-emption of available resources of all kinds by the military sector which otherwise could have been used for providing basic necessities of life to millions of people in the Third World countries. While the existing stock of tens of thousands of nuclear warheads is enough to destroy the entire world several times over, the arms buildup continues unabated. The costs of this collective madness are staggering. In 1978, before the latest escalation of costs, world military spending was about 450

2. Stockholm International Peace Research Institute, Warfare in a Fragile World: Military Impact on Human Environment, London: Taylor & Francis, 1980, p.58.

billion US dollars, that is over one billion dollars per day; the current world military spending is reportedly around 1000 billion dollars annually. But at the same time more than thirty million people - about half of them children - die of starvation and poverty related diseases every year; another 500 million are seriously undernourished.³

The Brandt Commission Report⁴ estimates that the expenditure on one modern military tank is about one million dollars which could otherwise be used to improve the storage facilities for 100,000 tonnes of rice and thus save 4,000 tonnes or more annually. One person can live on just over a pound of rice a day. Also, for the price of just one fighter plane (200 million US dollars), one could set up about 40,000 village pharmacies. But the production and accumulation of weapons of mass destruction continue throughout the world, and the present world stock of nuclear missiles is estimated at about 60,000.

3. Willy Brandt, North-South: A Programme for Survival, London: Pan Books, 1981, p.14.

4. Ibid., Pp.14-15.

DESTRUCTION OF LIFE-SUPPORTING ECOSYSTEM

The Earth has served as a life-support system continuously for the past millions of years. Life on the Earth has been able to survive and even thrive for this immense span of time because several basic requirements have been met. The word 'ecosystem' means 'a self-sustaining community of organisms - plants as well as animals - taken together with its inorganic environment'.⁵ The living and non-living components of the Earth are interdependent and are constantly interacting with each other. Animal life could not exist without plants nor plants without animals, which supply them with carbon dioxide. It is the green plant component of the biomass that is actually responsible for absorbing and converting solar light energy into chemical-bond energy which is useful as food. The green plants themselves use perhaps half of the food they manufacture for their own growth and development. The surplus is available to sustain the growth and development of all other life on the Earth, man included. On the other hand, photosynthesis by the Earth's plants would remove all the carbon dioxide from the atmosphere within

5. C.L. Cole, 'The Ecosphere' in Ehrlich, P.R. et al (ed) Man and the Ecosphere, San Francisco: W.H. Freeman & Co., 1971, p.11.

a year or so if it were not returned by fires and by the respiration of animals and other consumers of plants. In short, it is clear that the global ecosystem is an inter-connected worldwide system, any part of which is more or less sensitive to disturbances anywhere else in the system. This fragile ecosystem is being seriously damaged.

While a nuclear war is a direct threat to all life forms on this planet, the other important form of threat which would eventually terminate all the chances for the survival of any living species comes from the destruction of our ecosystem. Over-emphasis on economic growth along with excessive technological growth has created a variety of menacing threats, so that the prospects of sustainable life on the Earth in the long-run appear to be bleak.

The Global 2000, the first ever extensive report on the global environment submitted to the US President, concludes, 'if present trends continue, the world in 2000 will be more crowded, more polluted, less stable ecologically and more vulnerable to disruption. Despite greater material output, the world's people

will be poorer in many ways than they are today'.⁶

The chances of human activity bringing about environmental catastrophes are greatest with respect to atmosphere. Many believe that within few decades the release of carbon dioxide (CO₂) through the burning of fossil fuels will raise the global temperature of the atmosphere of the atmosphere beyond the point where serious climatic effects will begin to occur. Power plants and automobiles that burn fossil fuels release about 5 billion tonnes of CO₂ into the atmosphere each year at a rate of one ton per person.⁷ It has been estimated that if all the accessible coal (about 7,600 billion tonnes) is burnt, the CO₂ content of the atmosphere might rise to six to eight times its present level. The atmospheric CO₂ level has already increased by 30% between 1860 and 1987. The CO₂ level in 1860 was 260 parts per million (ppm) and today it measures 346 ppm.⁸

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6. The Global 2000 Report to the President: Entering 21st Century, Harmondsworth: Penguin, 1981, p.1.
 7. L.R.Brown, et al (ed), State of the World 1987: A Worldwatch Institute Report on Progress Toward a Sustainable Society, New Delhi:PHI, 1987.
 8. Ibid., p.9.

The increase in the atmospheric carbon dioxide level would cause a warming of the global temperature through what is called the 'greenhouse effect'.

Meteorologists at the University of East Anglia in U.K. constructed a comprehensive global temperature series for the last 134 years. The data show a long time-scale warming trend, with the three warmest years being 1980, 1981 and 1983, and five out of nine warmest years in the entire 134 year record occurring after 1978.⁹ The projected increase in the atmospheric CO₂ level for the years A.D. 2150 to A.D. 2200 might lead to an increase of global mean temperature of more than 6° celsius, which is, according to a 1977 study by the Geophysics Study Committee of the National Academy of Sciences in USA, comparable with the difference in temperature between the present and the Mesozoic climate of 70 million to 100 million years ago.¹⁰

One of the most feared consequences of the

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9. P.D. Jones, et al., 'Global Temperature Variation between 1861 and 1984', in Nature July 31, 1986.
 10. United Nations, 'The State of the World Environment, 1972-82', p.15.

projected global warming is the rise in the sea level that will result from both thermal expansion of oceans and the melting of glaciers and polar ice caps. During this century, the ocean has been rising at just over one millimetre per year. A one degree celsius increase in ocean temperature would raise sea level an estimated 60 cm or roughly 2 feet.¹¹

Coal burning plants emit vast quantities of smoke, ash, gases and various organic compounds, many of which are known to be toxic and the most dangerous of the gases is sulfur dioxide which can severely damage the lungs. Another pollutant released in the burning of coal is nitrogen oxide. The sulfur and nitrogen oxides are not only hazardous to the health of the people but also generate one of the most dangerous forms of air pollution called acid rain. In West Germany about 50% of the trees were affected by acid rain by 1984. Thousands of lakes in Canada and Scandinavia are already dead or dying and the entire fabric of life that took thousands of years to evolve is

11. L.R. Brown, et.al.(ed.), State of the World 1987, op.cit., p.15.

rapidly disappearing due to acid rain.

One of the marvels of modern technology and one-time wonder chemicals are called Chlorofluorocarbons (CFCs). They are inert, nonflammable substances which keep refrigerators cold, and are also used as a propellant for aerosol spray cans, and as a chemical agent to make foam products. But these CFCs also rise into the stratosphere where they destroy the ozone layer. The ozone layer acts as a protective shield in filtering out ultraviolet rays that can cause skin cancer, damage crops and harm marine life. Scientists estimate that even one per cent decrease in the ozone layer will cause tens of thousands of skin cancers each year. The recent findings by the NASA scientists in the USA indicate that this level of damage has already been surpassed. The loss of ozone layer calculated is 3 per cent in the temperate Northern atmosphere as against the scientists' prediction of 0.5 per cent to one per cent.¹²

While the US corporate voice Business Week in a recent editorial pleads, 'we need the ozone

12. Business Week April 4, 1988, p.30.

layer more than styrofoam', the CFC market leader, Du Pont Company is exerting pressure on the policy makers from formulating any legislation against the production of CFCs in the USA.

Some of the most disturbing environmental effects are in the area of forest destruction and the resulting extinction of plant and animal species. In the Third World countries, the forest cover is diminishing most drastically as a result of land clearing, firewood gathering and logging. However, the important factor to be related with deforestation in the Third World countries is the condition of abject poverty of the people. Whereas, in the industrialized countries it is principally for luxury consumption. For instance, one edition of the 'New York Sunday Times' requires the destruction of 850 acres of trees and 60% of the newspaper content is nothing but advertisements.¹³ Myers¹⁴ estimates that each year 200,000 square kilometres of tropical moist forest are lost to commercial logging. At this rate by the year A.D.2020 virtually all of the physically accessible forest in the

13. V. Papanek, Design for the Real World, New York: Pantheon, 1974, p.86.

14. N.Myers, The Sinking Ark, Oxford: Pergamon, 1979, p.174.

Third World countries will have disappeared.¹⁵

But the ecological consequences of such deforestation can hardly be exaggerated. Generally, deforestation results in rain fall run-off, accelerated soil erosion, and diminished water quality. The other important role forests play is in absorbing CO₂ from the atmosphere and at a time when the atmospheric CO₂ level is increasing each year, deforestation will have serious effects on the global temperature.

The predominantly agricultural economies of the Third World countries depend on the availability and quality of natural resources for the sustained use of the bioproductive systems of agriculture, forestry and fishery. Degradation and depletion of land, soil, water and forests are thus the outstanding environmental problems of these countries. The inability of bioproductive systems to produce sufficient food for rapidly growing population could become one of the major problems in the future.

15. The Global 2000, op.cit., p.26.

The world population will grow from 5 billion in 1986 to 6.3 billion in the year A.D.2000 and the 90 per cent of this growth in population is predicted to be in the poorest countries.¹⁶ It would be very difficult for the poor countries to meet the increase in the food-grain requirements by A.D. 2000. According to an estimate by the Worldwatch Institute,¹⁷ over 2 million deaths were caused by famine in the 1970s in these countries.

The total foodgrain availability will be hampered for two reasons. First, the significant loss of agricultural land brought about by changing land use, especially by the expansion of human settlements. Estimates show that the cropland area may not increase at all during the remainder of this century. The per capita grain-harvest area will shrink from 0.24 hectare in 1950 to 0.12 hectare by the end of the century.¹⁸ The important factor is the degradation of land and consequent loss in fertility due to soil erosion, salinization,

16. The Global 2000 Report, Op.cit., p.2.

17. L.R. Brown, et.al. (ed.), State of the World 1984: A Worldwatch Institute Report on Progress Towards a Sustainable Society, New Delhi: PHI, p.188.

18. L.R. Brown, et.al (ed.), State of the World 1987, Op.cit., p.124.

alkalinization, chemical degradation and desertification. Modern farming techniques along with massive use of petrochemical fertilizers and pesticides particularly in the Third World countries after the so-called 'Green Revolution' are posing serious problems to soil fertility and to the society and the economy as well. This new technology has provided the opportunity for the multinational corporations in agribusiness to enter these poor countries thereby opening up new avenues of exploitation. On the other, the long-term use of such chemical fertilizers has endangered the natural process of nitrogen fixation by damaging the soil bacteria involved in this process. Consequently, crops are losing their ability to take up nutrients from the soil and are becoming more and more addicted to synthetic chemicals. F. Capra says that we have literally moved our agricultural base from soil to oil. In addition to its negative impact upon the soil, the cost of petrochemicals enters the cost of production of foodgrains constituting about 60 per cent of the total cost.

Soil erosion resulting from deforestation and so on, is in some ways 'the most serious of the threats civilization faces'.¹⁹ It can survive the exhaustion of oil resources, but not the continuing wholesale loss of top soil. At present the top soil erosion is about 22,700 million hectares per annum out of a world total crop land availability of 124,920 million hectares,²⁰ and the quantity of the soil erosion is 26 billion tonnes per year. All these would have serious implications on the future foodgrain availability.

Depletion of finite, non-renewable natural resources like coal, oil and gas etc., due to the expansion of industrialisation in order to increase the production and consumption of material goods would be a major problem for a sustainable development in the future. For instance, by the year 1986 nearly half of all oil discovered had already been consumed. The total availability of

19. L.R. Brown, Building a Sustainable Society, New York: W.W. Norton, 1981, p.13.

20. L.R. Brown, et.al (ed.), State of the World 1984, Op.cit., p.62.

all chemical fuels is estimated to be around 12,800,000 million tonnes of standard fuel (TSF). The annual consumption of all energy resources is expected to be around 25,000 million TSF by A.D. 2000. At this rate by the year 2035 about 90% of the world's prospected resources of oil and gas would have been completely exhausted. The exhaustion of this important energy resource poses serious problems at a time when no alternative energy is available. However, after the oil crisis of 1970s, most of the industrialized nations have shifted to nuclear energy. By mid-seventies many Third World countries also started constructing nuclear reactors for generating more electricity to meet the requirements of expanding industrial bases.

There are many inherent dangers involved with the nuclear technology. The danger of radiation due to accidents in the nuclear reactors and the problem of disposal of radioactive nuclear waste materials are posing serious environmental threats and can cause one of the dangerous forms of water, soil and air pollution. Many nuclear accidents

have already occurred. For instance, the accident at the Three Miles Island in the USA and the more recent explosion of Chernobyl nuclear reactor in the USSR are the worst ones. The Chernobyl explosion in 1986 killed 31 people and more than a million people in the Ukraine had to be evacuated. The future cancer deaths are expected to range from a few hundreds to 100,000 due to the Chernobyl incident alone.²¹ Above all, radioactive materials were deposited over more than 2000 Km. from the plant and in at least twenty countries.

The waste materials produced by the nuclear reactors remain toxic for thousands of years and their disposal is one of the serious problems associated with nuclear energy. Plutonium, the most dangerous of all radioactive by-products, remains poisonous for at least 500,000 years. Projections by the nuclear industry anticipate a total of 152 million gallons of intensely radioactive waste by A.D. 2000. If the American nuclear industry expands according to projections made in 1975 and if it contains its plutonium with 99.99% perfection it will be responsible for 500,000 fatal lung cancers per year for about fifty years following the

21.. L.R. Brown, et.al (ed.), State of the World 1987, p.39.

year A.D.2020. This will amount to a 25% increase in the total death rate in the USA.²² As of mid-1986,²³ the world has 366 nuclear power plants in operation for a generating capacity of 255,670 megawatts and the International Atomic Energy Agency's (IAEA) projection shows that by the year 2000, the generating capacity would go upto 505,000 megawatts.

IS 'DEVELOPMENT' DANGEROUS?

An elaborate description of the nuclear threat and various other aspects of the ecological crisis discussed in the previous pages emphasises the immensity and severity of the threat that the contemporary human civilization is faced with. Also, it makes it clearly evident that the contemporary 'development' thinking is dangerous and has become counter-productive. Development is a much broader conception and it describes the material and non-material achievements of an individual and the society at large. Development includes progress in almost all aspects of the society, the polity,

22. F. Capra, The Turning Point: Science, Society and the Rising Culture, London: Flamingo, 1982, p.263.

23. L.R. Brown, et al.(ed.), State of the World 1987, p.68.

the economy, social values, institutions and so on.

In the contemporary notion of 'development' much emphasis is on economic growth i.e. how much of goods and services are produced and consumed by the people and what is their rate of growth? Therefore, in the contemporary conception much greater emphasis is placed on the quantitative than the qualitative aspects of such progress. It is obvious, from the fact that the per capita GNP is taken as the important indicator of the welfare of an individual.

Nevertheless, it is taken for granted that the more the individual consumes the higher is his well being and standard of living. Therefore, he consumes everything; he consumes food; he consumes nature's beauty of landscapes etc., as a tourist, he consumes hospital facilities; he consumes the zoological parks and green lawns and he consumes even education. Thus he has become a 'consuming machine' and this is what the per capita GNP is supposed to indicate. Money and hence, material possession and consumption are the measure of the

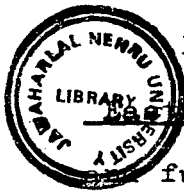
standard of living. Various social pathologies are rampant: drug-addiction, divorce, prostitution, alcoholism, suicides, mental illness, alienation, social tensions, depression and stress. The per-capita GNP does not reflect these social pathologies.

The quality of life and state of the societies in the Third World countries are still worse. These countries are already plagued with the 'classical' problems of poverty and starvation deaths of millions of human beings. Malnutrition, poor sanitation and health, illiteracy, slums, hunger are the state of life in these societies. The implementation of the policy prescriptions of the 'developmental models' of the industrialised West over the past three decades for attaining 'development' has, in fact, transported all the social problems of the West to these countries. Now these countries are faced with both the 'classical' and 'modern' problems of development.

During the 1960s and 1970s, new theoretical explanations came up as critiques of the conventional or the neoclassical Western model of development. These, 'underdevelopment and



dependency' theories, as they came to be known as, explained the underdevelopment of the Third World or the peripheries in terms of the 'over-development' of the Western Capitalist countries of the Centre from the Marxian view-point. Within this school of thought the interpretations of the underdevelopment of the Third World are heterogenous depending upon the categories they used and hence the solutions for any social action also of a varied nature. This is discussed in detail in Chapter 2.



Rudolf Bahro in his book The Alternatives in Eastern Europe has critically analysed the nature functioning of socialism in Eastern European countries.²⁴ He argues that these countries are following not a Marxist path to socialism, but a 'non-capitalist road' to industrialization. The notion of development in these societies does not differ from that of the Western capitalist countries. The parameters of 'development' in these countries are not much different from that of West, and this in turn have created the same ecological destruction, resource depletion, and perpetuation of the international arms race.

24. Rudolf Bahro, The Alternative in Eastern Europe, London; New Left Books, 1978.

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NEED FOR AN ALTERNATIVE PERSPECTIVE:

The point to be made here is that irrespective of the political and economic systems that one tries to achieve, as long as an idea of development remains the same, the crisis that the contemporary civilisation is faced with would aggravate and can very well bring the end nearer. Any search for alternative, sustainable path of development-proper cannot be possible within the prevailing order. This calls for an alternative perspective of development which we call the Green Perspective. This perspective is different from the existing ones in the sense that it is a holistic perspective which recognizes the interdependence between man and nature. It is only from this perspective can one be able to understand the linkages between the contemporary conception of 'development'; the militarism and the ecological crisis. The alternative sustainable path of development, or the development-proper which could be conceptualised from a green perspective, would invariably be a sustainable one ecologically. And therefore, ^{it} would not advocate a wasteful and affluent living standard and hence negates the need for high-technology and capital-intensive industrialization.

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C H A P T E R - I I

D E V E L O P M E N T

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During the past few decades concepts and definitions of development have become sufficiently numerous to fill volumes in the academic libraries of the world. But still the term 'development' carries no coherent meaning and there is a lot of confusion about it. For example, there is no entry under 'Development' in the International Encyclopedia of the Social Sciences. Under the entry 'Developing Countries' the reader is referred to economic growth; industrialization; modernization; nationalism; power transition; stagnation; and technical assistance'. If one follows through under the entry 'Modernization', it is stated as follows: 'modernization is therefore the process of social change in which development is the economic component'.¹

The most common perceptions about development, however, have tended to be associated with the attempts of the Third World countries to 'catch up' with the industrialized countries of the West, because for the past four decades 'development' as

1. D.L.Shills, (ed.), International Encyclopedia of the Social Sciences, New York:Macmillan Co., & The Free Press, 1968, Vol.10, p.387.

opposed to 'underdevelopment', has become synonymous with industrialization, urbanization, high GNP growth rate; economic expansion and growth. Images of development are thus connected with the eradication of poverty, urban slums, population growth, high rate of infant mortality, economic disadvantage, large number of people in rural poverty, poor health, illiteracy, high rates of unemployment and so on, in order to achieve high living standards, a rising per capita income, increase in productive capacity, economic growth, but not mere growth, growth with equity, basic needs satisfaction, catching up with industrialised countries in technology, wealth, power status, economic independence, self-reliance, scope for self-fulfilment for all. Thus development appears to have come to encompass almost all facets of the good society, and almost everyone considers development as a desirable objective for the countries and people of the Third World. But so diverse have the interpretation of 'development' become that one sometimes wonders whether it now stands for anything more substantial than everyone's utopia. Certainly when development is identified

with material progress alone, the word seems to have all but lost any specific meaning.

Development as a historical process is nothing new. It had been taking place for centuries in Europe and outside before anyone consciously put forward material progress as a desirable objective. Gunnar Myrdal wrote in his book Economic Theory and Under Developed Regions that, "the emergence in underdeveloped countries of this common urge to economic development as a major political purpose, and the definition of economic development as a rise in the level of living of the common people, the agreement that economic development is a task for government.....all this amounts to something entirely new in history."²

Indeed, it is also new in the recorded human history for the first time-ever that the entire human civilization is faced with the threat of complete extinction due to ecological vandalism and nuclear holocaust. It brings to light one

2. Gunnar Myrdal, Economic Theory and Under-Developed Regions, London: Duckworth, 1957, p.80.

fact very clear that the survival of any living species on this planet can no longer be taken for granted as it used to be the case ever since life emerged on Earth. It means that no meaningful dialogue on development can be possible without addressing to these very fundamental questions of survival.

Conventional Wisdom: 'Take-off' to Where?

'Underdevelopment' has been interpreted essentially as a time-lag in the various branches of socio-economic activity, as compared with the situation prevailed in the so-called 'developed' countries. 'Development' has been regarded as a universal process occurring for all places and at all times in the same sequence of successive 'phases'. A progression has thus even envisaged, leading necessarily from the traditional, predominantly agricultural society towards 'modern' society, described as the 'age of mass consumption', and inevitably involving sooner or later, an 'economic take-off'. This seems to have been the premise, explicit or otherwise behind the efforts made in the last few decades after the World War II.

After the World War II there was a well-established consensus among officials, economists, national leaders on the need to do something about the "urgent problem of economic development of underdeveloped countries"³, some of them were prepared to go so far as to declare that "the development of the less advanced countries may be regarded as the major need of the decades following the war".⁴ From 1949 onwards, a large number of literature began to appear, some of the earliest contribution coming from economists such as Singer, Rosentein-Rodan, Nurkse, Prebisch, Myrdal and Lewis. Their books and articles, and some by statesmen in the Third World countries themselves, crystallised what became the conventional wisdom on economic development.

The reasons for the emergence of economic development as an international policy objective after the World War II are not difficult to identify. The war had changed the balance of

3. United Nations, World Economic Report 1948, New York, 1949, p.251.

4. The Work of the FAO, Food and Agriculture Organisation (1945), quoted in G. Hambridge, The Story of FAO, New York: Van Nostrand, 1955, p.56.

world power. The former colonial powers emerged greatly weakened by the national independence movements in Africa and Asia. The ascendancy of the Soviet Union and the consequent spread of communist influence in the Third World disturbed this Western Capitalist countries.

In the most general terms, there was little doubt in anyone's mind about the meaning and purpose of economic development. In the words of an early postwar ILO document, "the improvement of standards of living is to be regarded as the principal objective in the planning of economic development".⁵ Raising living standards could mean many different things and it could be interpreted as an all-encompassing objective, as when Myrdal said that 'development means improvement of the host of undesirable conditions in the social system that have perpetuated underdevelopment.'⁶ Frequently economic development came to be equated with industrialisation.

However, the interpretation got narrowed down such that the aim of economic development is to raise

5. United Nations, Economic Report: Salient Features of the World Economic Situation, 1945-7, New York, 1948, p.271.

6. Myrdal, Op.cit., p.58.

the national welfare of the entire population and the explanation given was that "essentially the problem of economic development is that of raising the level of national income through increased per capita output so that each individual will be able to consume more."⁷ To put it more technically, to "define economic development as the process by which an economy is transformed from one whose rate of growth of per capita income is small or negative to one in which a significant self-sustained increase of per capita income is a permanent long-run feature."⁸

Thus the central theme of the economic development literature was taken to be growth in output and income per capita in the Third World countries. Later on, the question revolved around searching for the crucial factors responsible for 'underdevelopment': such as capital formation, human capital and trade, etc.,

The United Nation's First Development Decade (D.D.-I) of 1960-70 was based on this strategy of

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7. P.T. Ellsworth, The International Economy, New York: Macmillan, 1950, p.796.
 8. Irma Adelman, Theories of Economic Growth and Development, Stanford: Stanford University Press, 1961, p.1.

industrialisation for accelerating economic development in Third World. To everyone's dismay the DD-I failed to meet even the minimum targets and H.W. Singer⁹ terming it a 'decade of frustration', pleaded for more attention to the social aspects of development — health, education, nutrition. In his perception, "the problem of the underdeveloped countries is not just growth, but development; development is growth plus change; change, in turn, is social and cultural as well as economic, and qualitative as well as quantitative....." Thus the concept of 'social development' i.e. better health, better education, better nutrition; came to occupy the main objectives of the mainstream development thinking. Dudley Seers,¹⁰ and Paul Streeten,¹¹ came up emphasising what they called 'Basic Needs' approach to development. Dudley Seers seemed to have believed that 'development' could be achieved by simply answering three questions: "What has been happening to poverty? What has been happening to unemployment? What has been

9. H.W. Singer, "Social Development; Key Growth Sector," International Development Review, March 1965, p.5.

10. Dudley Seers, "The Meaning of Development", in International Development Review, December 1969, Pp.2-3.

11. Paul Streeten, 'The Distinct features of Basic Needs Approach to Development,' in International Development Review, 1977, Pp.8-16.

happening to inequality? If one or two of these central problems has been growing worse, especially if all three have, it would be strange to call the result 'development' even if per capita income has doubled."¹² Therefore, during the 1970s the concept of 'social development' that is provision of shelter, better nutrition, better health, education, eradication of poverty, unemployment, redistribution of income and wealth came to dominate as policy objectives of the conventional developmental thinking. However, going up in the chart of economic growth rate has remained ultimate goal of all such developmental exercises.

Indeed, 'development' has not been so easy to be solved with Dudley Seers' three questions. Even the World Bank in its latest report accepts that "since 1980 matters have turned from bad to worse; economic growth rates have slowed; real wages have dropped and growth in employment has faltered... governments have reduced their real spending on social services."¹³ The report says that between 1970 and 1980 the number of people 'with inadequate

12. D. Seers, Op.cit.

13. The World Bank, World Development Report 1988, New York: Oxford University Press, 1988, p.4.

diets' in poor countries increased from 650 million to 730 million. The other aspects of the so-called 'social development' are still worse; there are about 1000 million people without shelter; 1300 million without access to safe drinking water; more than 900 million illiterates. All these show that 'development' has yet to 'trickle-down' to these people.

Simultaneously the very same process of 'development' over the years has been accelerating the destruction of ecology in the form of reckless depletion of energy and non-renewable finite resources in addition to pollution of soil, water and air. But in the neoclassical economics which forms the core of the conventional wisdom, the destruction of ecology is treated as 'externalities' which are controllable.

However, the conventional development perception tries its best to maintain the status quo and accepts the legitimacy of the prevailing world order. Therefore the problems of development are explained within this framework. In fact, the reality is

otherwise. That is the so-called problems that the conventional wisdom tries to solve. As stated earlier, these are all intricately related to the international political and economic order. Hence, the so-called problem i.e. the poverty of Third World which manifest in various forms, the problems associated with overdevelopment of the industrialised countries' like inflation, unemployment, social tension and unrest are mere symptoms of a deep rooted crisis. The conventional perspective is merely attempting to solve these symptoms and in the process aggravates the disease which has now brought the very survival of entire human civilization at stake. In order to understand the immensity of the threat which manifests itself in the form of ecological degradation and production and accumulation of weapons of mass-destruction, and to differentiate the symptoms from the 'real' problems of development we ought to have an entirely different perspective on social change and development. And the crisis of ecology and the arms race have to be interpreted within the framework of global economic relations.

The other dominant explanation of the poverty of the Third World and its underdevelopment stems from the Marxist perspective. For Marx, industrialization was a progressive force which harnessed technology to natural resources and permitted a reduced dependence on agriculture. Marx wrote in the third volume of his Capital that, "one of the major results of the capitalist mode of production is that....it transforms agriculture from a mere empirical and mechanical self-perpetuating process employed by the least developed part of society, into the conscious scientific application of agronomy."¹⁴ Capitalism developed, according to Marx, through the more efficient production and appropriation of surplus value, which implied new land resource uses. While all value was derived from the exploitation of labour power, environment played only a secondary role.

Marx, however, emphasized the importance of Nature in the social and economic fabric throughout

14. Karl Marx, Capital, Vol.III Moscow: Progress Publishers, 1974, p.617.

his writings and consistently reflected a keen awareness of society and nature as an organic whole. In his Economic and Philosophic Manuscripts, he says, "Nature is man's inorganic body — nature, that is, in so far as it is not itself the human body. 'Man lives on nature' means that nature is his body, with which he must remain in continuous intercourse if he is not to die. That man's physical and spiritual life is linked to nature means simply that nature is linked to itself, for man is part of nature."¹⁵

But in the writings of other Marxists, the focus of attention has been on exploitation of labour rather than natural resources. However, the early 1970s marked a watershed in critical development theory, according to which capitalism produces polarization, day in and day out. The basic mechanism is that capital utilizes its economic and political dominance to exploit labour throughout the global system by employing for this purpose

15. Karl Marx, Economic and Philosophic Manuscripts of 1844, New York: Norton, 1972, p.61.

both armed forces and market forces; and that, throughout this structure, big capital dominates over small capital. This school of thought came to be known as 'underdevelopment' and 'Dependency' models of development. Paul Baran, the first one to focus largely on the problems of underdevelopment from the Marxian perspective argues that, "the capitalist system, once a mighty engine of economic development, has turned into a no less formidable hurdles to human advancement".¹⁶ The reason is that "economic development of underdeveloped countries is profoundly inimical to the dominant interests in the advanced capitalist countries"¹⁷ This thesis was further developed by A.G. Frank and others of the ECLA (UN Economic Commission for Latin America) who form the dependency school. They argue that capitalism had long ago entered every nook and corner of the satellite world in such a way as to make global capitalism an integrated structure of metropolises and satellites that bind nations, regions, and urban-rural areas into 'dominant-dependent' relationships. A systematic transfer of economic surpluses continually occurred from the base of this world structure — that is, from millions of workers

16. Paul Baran, The Political Economy of Growth, New York: Monthly Review Press, 1957, p.402.

17. Ibid., p.120.

and peasants, that benefitted the metropolises and destroyed the satellites throughout the structure, in which a lower metropolis was in turn a satellite of a higher metropolis. The only way of shaking off this chain, according to them, is through the peasantry and industrial working class removing the 'comprador' bourgeoisie in the Third World and the subsequent establishment of a self-reliant socialist state.

In fact, this perspective provides the theoretical framework for understanding the poverty of the Third World, largely in terms of the way labour is exploited and the economic surplus is transferred to the metropolises. Nonetheless, this perspective as well clearly assumes that 'development' equals industrialisation, hence makes no attempt to address the crucial issues of ecological problems; the crisis of ecology which now poses serious threat to the survival of the whole of human race. Therefore, the question of development is not pertaining to the Third World countries 'development' alone, only but of the survival of the entire human civilization from the ecological and nuclear catastrophes.

Therefore, the global obsession with growth and technological sophistication have resulted in a remarkable similarity between capitalist and communist countries. At least from the ecological point of view, Sovietized socialism would appear to be merely a continuation of capitalism by other means. The 'Soviet Industrialization Debate of 1924-28' shows that there is no doubt about what they were all concerned with, was economic development strategy - "to all of them industrialization was both the synonym of economic progress and an indispensable basis for a fully socialist society in the future".¹⁸ Lenin in his New Economic Policy made plans for the long-term economic development of the Soviet Union, "to catch-up with other nations".¹⁹

The conventional development notion of undifferentiated growth over the years has resulted in massive industrialization, excessive technological growth and in the growth of new institutions and all

18. A. Erlich, The Soviet Industrialization Debates, 1924-28, Cambridge; Mass.: Harvard University Press, 1960, p.xvii.

19. Ibid., p.7.

these are closely interrelated in so far as the present crisis is concerned. The world cannot physically sustain present rate of industrial growth since the resources this requires are simply not available. If the Third World countries were to industrialize along the capitalist line this would ultimately exhaust the finite resources, soon causing excessive ecological damage. 'Development' in terms of industrialization and material growth wherever it occurs in the future, the whole world would be brought closer to the point at which economic expansion means global ecological disaster. The message is that the ecological system cannot tolerate increasing growth as there are physical limits to such growth. The over-developed industrialized countries make larger demands on the Third World's natural resources. Resources are being exported to meet the requirements of the wasteful and affluent living standards of these societies through the transnational corporations operating in the Third World.

Mostly the Third World countries are forced to export the primary commodities on unequal terms in order to earn foreign exchange only to be

paid back for importing manufactured and capital goods from the rich countries. Therefore, even without industrialization occurring in these countries they are made to face the consequences of ecological destruction. The per capita consumption of energy in the United States is ten times that of Brazil and three hundred times that of Bangladesh. So far as forest resources are concerned forest area of the industrialized countries has already stabilized, but virtually all of the physically accessible forest in the Third World would have disappeared by the year 2020.²⁰

Now there is sufficient evidence to show that the global ecosystem has been seriously damaged in the form of atmospheric pollution, soil and water contaminations. These destructive effects on the life support system of the planet are the consequences of the commitment to reckless industrialization in order to achieve high material living standards. Even without a nuclear catastrophe ever taking place, the ongoing damage of this fragile ecosystem would result in ecological catastrophe

20. The Global 2000 Report to the President,
Harmondsworth: Penguin, 1981. p.26

which can eventually terminate all the chances for further evolution of life on this planet.

The environmental degradation and increasing rural poverty in the Third World are interrelated and are the outcomes of the so-called 'modernization' of agriculture in these countries. Majority of the population in these countries are dependent on agricultural land and other natural resources for their livelihoods. Between 1966 and 1970 new methods of farming were introduced to increase the agricultural productivity in these countries. The 'Green Revolution' as it came to be known as was a package comprising of 'high-yielding varieties of seeds, petrochemical fertilizers, and pesticides along with mechanised farming techniques'. By early 1970s the chief disadvantages of the 'Green Revolution' started appearing. Rural poverty in all these Third World countries has gone up significantly since then and the very process of creating more food has actually reduced people's ability to buy foodgrains, hence brought nothing but misery to the poor.²¹

21. ILO, Poverty and Landlessness in Rural Asia, Geneva: ILO, 1977.

Since agriculture has been the major source of employment, the introduction of mechanised farming techniques in the form of tractors etc. displaced agricultural labourers resulting in massive rural landless unemployment. Small and marginal farmers had to leave because of increasing input costs. Throughout Asia, the landless increased as the new technology, combined with a population increase of 2.5 per cent per annum, compounded the effects of inequitable systems of land tenure and provided landlords with an incentive to dismiss their tenants.²² High input costs of fertilizers, pesticides and oil, etc., increased the price of foodgrains. Therefore the food consumption of the poorest in the rural areas had dropped, especially of the coarse grains and pulses which formed a large part of the poor's diet.²³ The increasing rural unemployment and landlessness force the rural poor to migrate to towns and cities. In this way as many as 75,000 people are estimated to be leaving the rural areas of the Third World every day.

22. Ibid.,

23. B. Bowonder, "The Myth and Reality of High-Yielding Varieties in Indian Agriculture", Development and Change, Vol.12, No.2, 1981, p.295.

Above all, the excessive use of petrochemicals are now resulting in ecological degradation in the form of soil fertility loss. A fertile soil is a living soil containing billions of living organisms and it is a complex ecosystem in which the substances that are essential to life and more in cycles from plants to animals, to soil bacteria, and back again to plants. The bacteria carry out various chemical transformations, such as the process of nitrogen fixation, which makes nutrients accessible to plants and the plants in turn provide nourishment that sustain all life on Earth. Massive infusion of chemicals into the soil has been destroying these soil bacteria which would eventually reduce the productive capacity of the soil. On the other hand, dead soil is more susceptible to wind and water erosion, which are taking an increasing toll. Similarly the pesticides used in conjunction with the new package were non-biodegradable and residues accumulated in fodder crops, milk and foodgrains, the consumption of which would cause serious health problems and diseases.

A closer examination of the Third World poverty and starvation even after the so-called modernization

of agriculture to increase the food production and the consequent ecological destruction would inevitably lead to question the operation of the transnational corporations (TNCs) in these countries. These corporations use their worldwide business structure to control production from the raw materials through the processing to the final retail stage. These corporations largely control the legislative process, distort the information received by the public through media and determine to a significant extent the functioning of the economic system and perpetuate a value system consistent with corporate interests that is profit maximization.

So far as the Third World agricultural sector is concerned these corporations have been virtually supplying all the components of the 'Green Revolution' package i.e. the farm machines, tractors, petrochemical fertilizers, pesticides and other technical expertise. Third World agricultural sector is serving as a profitable business venture for these corporations because of the availability of cheap labour, raw materials and the complete absence of any environmental restrictions. As a result these corporations have been making abnormal profits and

transferring them to their country of origin. In the process, in the Third World countries the rates of growth of rural poverty, malnutrition, starvation deaths, slums, and ecological destruction are increasing.

The large corporate giants like Nestle, General Foods, Unilever, Del Monte are operating throughout the world in the business of food processing and marketing. These companies process food that is produced in the Third World and market them in the supermarkets or stores of large cities all over the world. Therefore the kind of food produced in the poor countries is influenced by the consumption pattern of the rich countries. For instance, most of the cereal production in the Third World countries is consumed directly by human beings but as people in the rich countries eat more meat, an increasing proportion of the cereal is being diverted into animal feeds. Animals in the rich countries are fed 50 times the quantity of grain given in food aid. The entire problem of hunger in the world could be eliminated by the diversion of less than 3 per cent of that grain fed to animals in the rich countries.²⁴

24. F.E. Trainer, Abandon Affluence, London: Zed Books Ltd., 1985, p.143.

Corporations engaged in agribusiness in the poor countries manipulate the land use for producing foodgrains especially meant for export to rich countries. For example, Nestle the second largest food company without owning a single cow or acre of coffee or cocoa plantation is marketing dairy products throughout the world. As a result, milk has nearly disappeared from rural consumption.²⁵ The milk produced in the villages is sold to the companies which in turn process and sell them in urban markets. Thus, the transnational corporations, an integral part of the prevailing order, are the true breeders of poverty in the Third World. From the ecological point of view their accumulation drive is a major reason that could explain the threat of survival of the entire human civilization.

Likewise from the ecological point of view growing public expenditure on armament production can be anything but rational. The mainline economist is interested only in the effect such

25. Ibid., p.144.

expenditure has on aggregate demand in so far as the economy could reach a new equilibrium position where the total employment, and output would be higher. For the military-industrial complexes defense contracts are sheer bliss. Such military spending throughout the world now amounts to US\$1,000 billion. Besides, production uses capital-intensive technology and hence generates few employment or rather misemployment opportunities.

However, over the past two decades the US Defense Department and the military industry have succeeded in creating a series of public hysterias about national defense in order to be granted regular increases in military spending. To do so military analysts have perpetuated the myth of an arms race in which the Soviets are ahead of the United States. In reality the US has been leading the Soviet Union in this insane competition ever since it began.

People in the rich countries are not left untouched by the business corporations. In fact, the whole society is well inducted into their business strategies of profit generation and expansion.

It is true that the people in the rich countries are living an affluent life style. High consumption and huge wastages have become the way of life. but in reality, such a life style is again created by the big business corporations through what is called 'consumerism'. In the mid-1970s, the US advertising industry was spending \$23,000,000,000 each year²⁶ in an effort to cajole people into consuming things they would not if left alone.

The mainline economists argue that such stimulations in consumption is necessary to 'create more jobs'. This is ^{again} an illusion. In reality, the corporations have been generating more unemployment in these countries. Increasing automation and computerisation of factories in order to produce still more technically sophisticated and novel commodities to compete in the market have been reducing the job opportunities. The impact of such unemployment is visible in the form of rampancy of various social pathologies these rich countries are now plagued with. Drug addiction, the worst of its kind, is found to be increasing among the

26. E.F. Trainer, Op.cit., p.219.

unemployed youths of almost all industrialised Western countries. Alienation at work place, mental illness, loneliness, alcoholism, social tension and suicides are increasing in these societies. No evidence can be quoted here to support the conventional assumption that further increases in production and consumption in these countries are likely to improve the quality of life.

From the above discussion, the following points emerge. 'Development' as it is presently conceived in terms of infinite increase in the production and consumption of material goods alone has become counterproductive and is ecologically unsustainable. There are physical and psychological limits to such undifferentiated growth. The prevailing world order determines the contemporary notion of development and in turn determined by it. The prevailing world order perpetuates world poverty, and causes ecological destruction, and accelerates the arms race. If the contemporary human civilization has to survive the threat of complete extinction, the problem of world poverty, ecological vandalism and militarism along with the problems

of overdeveloped rich countries, have to be seen in totality, because all these are closely interrelated. An alternative path of development has now become inevitable if the contemporary human civilization has to survive. And it cannot emerge within the prevailing world order. Therefore, a radical change has to be brought about. This is possible only by a change in the perception of humanity motivated towards achieving this end.

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C H A P T E R -III

EDUCATION

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The continuing ecological destruction that threatens the very web-of-life on the planet and the nuclear arms race that portend, a doomsday before long suggest that there is more than a slight connection between education and the present state of human affairs. The connection rests on the fact that man as a species of life which, in comparison with all other life forms, is of very limited instinct. He must learn in order to live. This is something that was probably as true for our earliest Cro-Magnon ancestors as it is for each one of us today despite the vast differences in the range of circumstances and needs. But in the midst of the present threat to the survival of humanity as a race which manifests in the form of ecological vandalism and the nuclear catastrophe, one wonders whether over the years man has learnt only in order to perish.

This point deserves more attention. Of all the living beings, though uncompleted in their evolutionary process, man is the only conscious being. Man objectifies the world and in so doing can understand and transform it. Because of their

capacity to transform the world, men can transform it either for good or for bad; which means men can construct or destroy; humanize or dehumanize the world.

In other words, as a species we are less guided by the instinct, rather by the information coded in our genes and more by conscious decisions. It enables us to give care and attention of life in an orderly and organized way; to choose the appropriate from the inappropriate: the life-sustaining from the life-destroying. Thus we continue to live and exist.

Learning and teaching are respectively the acquisition and transmission of such knowledge and as such constitute education. It is the cultivation of human minds and spirits, and is the foundation of the overall enhancement of life, and civilization. As it is defined by Paulo Freire, education is thus man's "ontological and historical vocation."¹

1. Paulo Freire, Pedagogy of the Oppressed, Harmondsworth, Penguin Books, 1972.

In fact, generation and acquisition of knowledge and its transmission to successive generations has been taking place since time immemorial. Therefore life on this planet has continued thus far. But is only the contemporary human civilization which is faced with the threat of a complete extinction. If men are the only conscious beings, who generate, acquire and transmit knowledge, it ought not to have brought in the very survival of man as a species under the threat of complete extinction. Such a threat raises serious and fundamental doubts about the function and purpose^{of} contemporary education. If education is the pursuit of awareness then why are we not able to perceive this grim reality? Thus the prevailing uncertainty regarding the continuation of life on this planet negates the very purpose and essence of education. Otherwise, it only shows that something must necessarily have gone wrong with our contemporary conception of 'education', such that it has been preventing us from perceiving this grim reality. In other words, what we have been doing in the name of education over the years has now become dangerously counter-productive.

Before examining what exactly had gone wrong with 'education' as it is presently conceived, let us see briefly those factors that necessitated such a change. Though changes in the goals and objectives of education can be traced back to the period of industrial revolution, perceptible changes occurred when the objective of development has become primarily in terms of achieving economic growth. Consequently, the industrialisation that has been taking place throughout the world as a policy objective has distorted our lives in many ways. Predominant dependence upon agriculture for livelihood has shifted to industry. That is, our occupation, consumption pattern, and life-style have now come under the influence of industrialization. Changes in the nature of labour in industries have brought qualitative changes in our learning process and hence upon our education as well.

Ever since the ob^session with material growth became the sole purpose of our development, education has become one of the most abused concept. However, the conscious efforts which have ultimately distorted the goals and purpose

of education all over the world, took place around 1960s. Leading economists of that time presented 'education' as one of the economic factors which has been contributing to higher productivity and therefore resulting in increase in the total output of goods and services.²

They argued that the fundamental problem of growth and development was no longer considered to be the creation of wealth, but rather the capacity to create wealth which consists of brain power.³ This was the beginning of the so-called "human capital revolution" and the man who almost single-handedly brought this concept into the contemporary 'development' thinking was T.W. Schultz. He has explained that, "investments in man are having a pervasive influence upon economic growth and that the key investment in human capital is education."⁴ In simple terms the human capital theorists' arguments run like this: investment in education, that is more schooling, increases the productive capacity of

2. Mark Blaug, Economics of Education, Harmondsworth: Penguin Books

3. H.W. Singer, 'Education and Economic Development', reprinted in his International Development: Growth and Change, New York: McGraw Hill, 1964, P.66

4. T.W. Schultz, The Economic Value of Education, New York; Columbia University Press, 1963, P.viii.

of the individuals and results in increased production of goods and services.

Once 'education' has become the avenue for investments, the problem of 'where to invest' confronted the economists. As a result, 'rate-of-return' analysts like G.S. Becker, Jacob Mincer came up with the concept of 'social-rate-of-return' and 'private-rate-of-return'.⁵ The social-rate-of-return is, according to them, the benefits that the society as a whole gets out of such investments while private-rate of return is that the benefits (or the resultant increases in income) that accrues to the individual. Therefore, their prescription was to invest in those areas of education that has higher social rates of return.

Over the years, however, not many achievements were made in these objectives. Moreover, our purpose here is not to enter into the cost-benefit analysis of such investments in education but

5. Gary S. Becker, Human Capital, New York: Columbia University Press, 1964.
Jacob Mincer, 'On-the-job training: Costs, returns, and some implications; in Journal of Political Economy, Vol.70, Oct 1962, p.50.

only to mention how education, the existential necessity of men, has been systematically used to change men into one of productive units. In other words, educational institutions are turned into 'processing units' which produce the individuals more productive who later join along with the machines in the industries as one of its parts to produce more material goods for consumption.

For those who claim that their theoretical approach comprehends the social reality of the class divided society much better than the establishment's theoreticians, the preoccupation is to explain how the existing educational system perpetuates and maintains the existing social order.⁶

For those status quoists who do not perceive that mass poverty, unemployment and unequal distribution of income and wealth are the by-

6. Samuel Bowels and H. Gintis, Schooling in Capitalist America: Educational Reform and Contradictions of Economic Life, London; Martin Carnoy, Education as cultural Imperialism, New York; McKay, 1974.

products of the prevailing system, education comes in as a handy tool in the job of removing poverty and to help in the redistribution of income and wealth.⁷ To them a better distribution of education itself, helps in the social mobility.

Ultimately this short of an explanation provided a rationale for a massive expansion of schooling throughout the world in the post II World War period. During the United Nation's Development Decades, this distorted concept of school and of formal education was introduced in most of the Third World countries as a part of the package of 'modernisation' programme.⁸ And this replaced most of the older formal pedagogical traditions that had existed earlier. Eventually education acquired a transnational character of imparting skills and technical knowledge on the one hand and removal of illiteracy on the other. In the process, education has now become under different labels depending upon the function

7. H. Chenery (ed.) Redistribution with Growth, New York: IBRD, 1980.

8. Ronald Dore, The Diploma Disease: Education, Qualification and Development, London: Allen & Unwin, Pp.72-83.

associated with it, like formal and non-formal education, vocational and technical education, adult education.....etc.

For reason cited in the earlier chapter the 'modernization' programmes drastically failed in accomplishing its promised goals of progress and development. And as a result of the implementation of education schemes, one more misery was added to the existing ones. This was the increasing number of 'educated unemployed youths', who were none but the victims of uprootedness from local vernacular means of livelihood and traditional value-systems. These set backs compelled the mainline economists to redefine the role earlier assigned to education. They now maintained that education serves the purpose of only a "Screening device"⁹ and "Qualification earning exercise."¹⁰

9. Kenneth Arrow, Higher Education as a Filter, Journal of Public Economics, No.2, 1973, p.194.

10. R. Dore, Op.cit., P. ix.

But what concerns us here is that in the process man has become totally subservient to the present educational system which is closely linked with the inhuman developmental programmes. As it is put by Ivan Illich, unlike in the past, now "we are constantly taught what is meaningful from a perspective which is not yet ours and we are taught things that, we are told, one day will be useful to us."¹¹ No wonder, he recasts modern man as the human subspecies of human educandus!

In the contemporary military-industrial civilisation, there exists a very thin line that differentiates educational institutions and the mass producing industrial establishments. While educational institutions, which has now become the 'processing units', turn out 'human capital' at an ever increasing scale. The goal of increasing the higher education serves the needs of economic or rather technological growth itself.

11. Ivan Illich 'Eco-Pedagogics and the commons' in R.M. Garrett (ed.), Education and Development, London: Croom Helm, 1984, P.10.

Education thus conceived to play the role of mere efficiency and productivity increasing functions by ways of providing various forms of technical skills for the ecologically destructive industrial system has done irreparable damage to the whole of humanity in general and the individual in particular. In this system, the individual with his acquired technical skills is made to function the roll of another kind of machine. That means he becomes a human machine and jointly performs along with the plants and machineries to produce more material goods for consumption.

The surrender of the original ideas of the educational institutions as to conform with a high-technology mass-producing industries with its emphasis on vocational training ends up with the erosion of all human values. In the nuclear industrial complexes alone as many as 5,00,000 highly trained scientists and engineers are working.¹² They dedicate their talents to discover

12. Narindar Singh, 'Education and Survival', in Economic and Political Weekly, Vol.16, April 18, 1987, p.701.

more effective means of bacteriological warfare, more paralysing gases, more powerful nuclear weapons and nuclear weapons. The paradox is that such scientists and engineers are conceptualised as 'human capital' in the contemporary notion of education. Because, 'capital' by its very definition is the 'produced means of production', but to define the human capital engaged in the production of mass-destructive weapons is nothing but a crude joke. And if the present education is engaged in producing this kind of human capital, such an education could very well be considered to be more dangerous than a nuclear missile. The reason being that once a nuclear missile is fired, after destroying the target the missile itself gets destroyed, but the human capital can keep replacing such destructive weapons. This reveals nothing but the dangerous misconception of the present education and its goal.

Throughout the world the public expenditure on education is increasing but such an escalation of this sort of education is as destructive as the escalation of weapons, but less visibly so.

Much the large proportion of the costs of education, although more particularly higher education, is a form of current expenditure because of it is predominantly vocational in nature. This is analogous to the part played by 'replacement investment' in maintaining the stock of physical capital. For this annual investment in higher education is likewise incurred as an input in order to replenish the stock of 'skilled human capital', without which the running of the modern military-industrial economy is impossible.

What has been said of expenditure on education can be extended to the 'information' media as well. Expenditure on books, journals, newspapers, on radio and television and more recently on home and business computers, has become necessary not only for vocational education, for coping with the mass of accumulating information but also for 'effective participation' in the economic and social activities of a high-technology society.

Though as a race we face the threat of complete extinction, at least we do not share the responsibility for it directly. In fact we have been brought into

this kind of situation by the superstate military industrial establishments. And the present education has been playing the role of a willing handmaiden in creating this form of 'development'. Firstly, and obviously, it supplies the necessary skilled technical manpower and the technology.

Secondly, it inculcates an attitude of mind which accepts the prevailing order. This follows that, education has made us less aware of the very real threat of complete extinction, because it has been preventing us from perceiving it. In other words, the present educational system is engaged in the dubious role of serving and legitimizing the present world order. This becomes obvious once certain features of present education is examined. An analysis of the present pattern of teaching and learning shows that it is basically narrative in character. In which the students are treated as listening objects and are turned into containers. Containers are to be deposited with information which the students memorize mechanically and repeat. This, Paulo Freire calls is 'the banking concept of education, in which "the scope of action allowed to the students extends only as far as receiving,

filing, and storing deposits."¹³ It inhibits their creative power and therefore critical thinking. Critical thinking alone enables men to perceive critically the way they exist in the world with which and in which they find themselves.¹⁴ In contrast the present day learning develops in men only 'naïve thinking', which inhibits the perception of reality in total. It is this naive consciousness which prevents man to perceive the crisis of his own survival.

Indeed, studies on the functioning of the human brain reveals that the present day education is causing serious damages to human brain. The new findings by Roger Sperry the Nobel Prize Winner of medicine in 1981 indicate that the left and right hemispheres of the human brain organize and encode information differently.¹⁵ This functional difference renders each hemisphere superior in performing certain types of tasks; the left hemisphere is better at such tasks as reading, speaking, analytical reasoning and arithmetic. And the right

13. Paulo Freire, Ibid., p.46.

14. Paulo Freire, Op.cit., p.56.

15. M.K. Raina, Education by the Left and the Right Implications of Hemisphere Specialization, New Delhi: Allied, 1984, p.9.

hemisphere is better at spatial tasks, recognizing faces and music, etc., Therefore, the right hemisphere is considered to be spatial, holistic and simultaneous in nature. This discovery has far reaching implications as far as our understanding of the existential reality is concerned. This finding of the human brain hemisphere functioning can be well extended to the argument that the left hemisphere undertakes value-oriented and therefore self-consciously ethicized functions, only if the right hemisphere issues the necessary command. But our educational system, as well as, science in general tends to neglect the nonverbal form of intellect. Since education places a 'premium on verbal/numerical categories have systematically eliminated those experiences that would assist young children's development of visionalization, imagination and sensory/perceptual abilities.¹⁶

Having produced sufficient mass destructive weapons, the corporate giants are now expanding their operations into the 'peace markets' such as school and homes etc.¹⁷ This is the new micro-

16. Ibid., p.29.

17. Krishna Kumar, 'Micro processors and the Educational Market' in Economic and Political Weekly, July 1987, Pp.1237-8.

processor based technology of computer aided teaching and learning in the schools. These marvellous and versatile magic machines are the modified versions of those equipments that guide atomic missiles and monitor enemy movements. In the schools, these micro-processor based pedagogy would reduce the chances for the child to learn from a human being with love and affection. All that a teacher has to teach are now available in the software packages. The argument for the introduction of computers in the schools is that education has to cope up with developments in other agencies of our life such as business, industry and the media, otherwise educational institution would become redundant. In fact, what has become redundant are those that form the essence and ethos of life itself.

To sum up, it is now clearly evident that the present education prevents us from perceiving the prevailing reality. If education is not to become a self-defeating exercise, the contemporary human civilization cannot afford not to perceive reality of the grim threat and therefore education has to become the pursuit of awareness. The

generation of awareness can only be possible through an authentic education. For that education has to become necessarily 'a radical critique of the prevailing order'.¹⁸ This turns our attention to the green perspective, and it forms the part of our next chapter.

18. Narindar Singh, Education and Peace (mimeo) p.7.

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C H A P T E R -IV

GREEN PERSPECTIVE

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The grim reality of ecological degradation and the nuclear threat reveals the fact that the existing pattern of development is unsustainable. This also suggests that the existing world-view, upon which the present development pattern over the years has emerged, is becoming inadequate to perceive the threat. Therefore, the present crisis is essentially a 'crisis of perception'.¹ The threat also reveals the complexity and interconnectedness of the problems. Therefore, in order to perceive the threat and to find a sustainable path of development what we need is a new world-view which could enable us to perceive the crisis in its totality.

An examination of the present world-view shows that it is predominantly based on the Cartesian - Newtonian paradigm. The principles of Newtonian mechanics are applied to the science of human nature and human society. The newly created social sciences came to be regarded as social

1. F. Capra, The turning point: Science, Society and the Rising Culture, London: Flamingo, 1982, p.xviii

physics. It was John Locke, following Newtonian physics, who developed an atomistic view of society, describing it in terms of its basic building block, the human beings. Society's behaviour is reduced thus to the behaviour of individual. The ideals of individualism, property rights, free markets and representative government all of which can be traced back to Locke's analysis of society as social physics.² This mechanistic and reductionist world view has produced particular set of values, beliefs and attitudes which are anthropocentric. Mechanistic paradigm is based on Descartes' mechanistic conception of the non-human world. And the non-human world is sharply separated from the world of human mind.

The mechanistic world view soon became the methodology for understanding the dynamics of society and emerged in the dominant paradigm of our present day social sciences, more so in economics. Adam Smith in his Wealth of Nations states that just as

2. Ibid., p.56.

heavenly bodies in motion conform to certain laws of nature, the society also operates on certain pre-determined laws. If these laws are obeyed economic growth will result. The basic concepts of 'invisible hand' and 'the market forces of demand and supply' are such laws that form the core of modern economic theory which is based on this mechanistic paradigm. Thus the social sciences, have become fragmentary and reductionist in their approaches . Particularly economics assumes all other non-economic phenomena to be constant. Therefore this approach fragments society for analytical purposes into producers, consumers and investors, and explain their behaviour along the pre-determined mechanical laws. Thus the society has come to be viewed as a collection of individuals whose nature is assumed to be given or pre-determined. In the analysis of the neoclassical economics the individual plays precisely analagous role to the atom in Newtonian mechanics.

Unlike physical sciences which deal with nonliving matter, social sciences study the society whose constitutents are conscious human beings. The belief that the human behaviour can be studied objectively has led to excessive quantification

and scientific rigour in social enquiry. In the process it has missed the essential component of human life which is guided by values, beliefs and meanings that are not quantifiable.

Thus, economics, fails to recognize that the economy is merely one aspect of a whole ecological and social fabric, a living system composed of human beings in continual interaction with one another and with their natural resources, most of which are, in turn, living organisms.

But the present ecological crisis shows that everything is connected to everything else. The ecological crisis is a concrete reality and the mechanistic world view does not enable us to perceive it. This raises fundamental question regarding the utility of the contemporary world view. The crisis also makes it clear that the world of man and nature are not separate as it is usually perceived. But they are closely interrelated. The threat of ecological catastrophe in the form of pollution of air, water, soil and the destruction of ecosystem in the form of depletion of energy resources show that survival of life on this planet is very closely interrelated to the survival of natural

ecosystem. This is also evident from the operation of the second law of thermodynamics, i.e. the law of Entropy which states that matter and energy can only be changed in one direction, that is from usable to unusable; from available to unavailable.³ Entropy Law, thus provides us a new vision of reality. It is an organic and holistic one. This brings to light what James Lovelock calls Gaia. The word Gaia is assigned to mean the biosphere or the sphere of life and its inorganic container around the Earth. It consist of two components: the layer of life around the earth and the inorganic 'shell' of air, water and the soil which contains it. It is the single largest living organism. The survival of Gaia, thus, means the survival of all life-forms on earth. It is tantamount to the saying that any disturbance to the eco-cycle, is the destruction of life on earth. Noted ecologist, Barry Commoner formulated four basic laws of ecology⁴. According to him violation of any of these

3. Jermmy Reflin, Entropy: A World View,

4. Barry Commoner, The Closing Circle: Nature, Man & Technology, New York: Alfred A. Knopf, 1971, Pp.33-48.

laws would mean a serious threat to the human survival. The following are the four laws of ecology.

- i) Everything is connected to everything else (or the existence of the elaborate network of interconnections in the ecosphere);
- ii) Everything must go somewhere (or what is excreted by one organism as waste is taken up by another as food);
- iii) Nature knows best (or that for every organic substance produced by a living organism, there exists in nature, an enzyme capable of breaking that substance down); and
- iv) There is no such thing as a 'Free Lunch' (or because of the global eco system is a connected whole, in which nothing can be gained or lost and which is not subject to overall improvement, anything extracted from it by human effort must be replaced)..

Thus, it is imperative that man's interventions with Gaia should be within the limits of these laws of nature. The rampant industrialism and

militarism over the years have not only depleted the exhaustible natural resources,,but also inflict grave dangers to the biosphere in the form of excessive pollution of air, water and soil. The magnitude of this danger and its implications upon our quality of life have been already discussed in Chapter-I.

This is happening precisely because our present economic analysis of production and consumption neglects two important factors. Firstly, the "Spaceship Earth" as K. Boulding calls it, is not an open system. As is usually assumed in our economic thinking it is now increasingly evident that Gaia is a closed system.⁵

Secondly, the contemporary notion of economic process overlooks the operation of the Law of Entropy, or the second law of thermodynamics.⁶ In fact the two phenomena are inter-connected. In a closed system, the outputs of all parts of the system are linked to the inputs of other parts.

5. Kenneth E. Boulding, 'The Economics of the Coming Spaceship Earth,' in H.E. Daly (ed). 'Toward a steady State Economy', San Francisco: W.H. Freeman & Co., 1973, Pp.121-132.

6. Nicholas Georgescu-Roegen, 'The Entropy Law the Economic Problem', in H.E. Daly (ed). ibid., Pp.37-48.

There are no inputs from outside and no outputs to outside; indeed, there is no outside at all.

As against the mechanistic paradigm to be replaced by an alternative which will enable us to acquire a life-pattern that is in co-operation and harmony with our human and non-human counterparts within this complex and interdependent biosphere which we all share. Such an alternative can be possible from a Green perspective which emphasises the man-nature relationship to be seen in total. The conceptions of green perspective, therefore, would be a holistic, non-reductionist and biocentric.

Viewed from a green perspective, which enables us to perceive the reality of the threat in its entirety shows that economic growth and gun are the two main manifestations of the threat. Global obsession with growth that is the rampant industrialization, over the years has been causing grave dangers to Gaia. The dangers manifest themselves in the form of pollution of air, water, soil and the depletion of non renewable and renewable resources. This would mean that even without a

nuclear holocaust ever taking place, Gaia would cease to sustain our species anymore. At the same time the ongoing arms race involves pre-emption of physical and human resources. Instead such resources could have been used in saving millions of people from poverty, malnutrition, starvation deaths, etc. In fact according to the 1985 issue of Ruth Sivard's report on World Military and Social Expenditures, it costs \$5,90,000 per day to operate just one modern aircraft carrier and everyday as many as 14,000 children die in Africa alone of hunger and hunger related diseases. In addition to the increasing misery and poverty, the whole ecosystem is endangered. In sum from the point of view of human habitation, the inadequacies of Gaia must become above more alarming.

Therefore, the problem of bringing about a social change is a complex and interrelated one. We have to find ways of relating all these together in our own consciousness. From green perspective, it becomes clear enough that it is important to create an awareness about the ecological and nuclear catastrophes. It is here education proper

comes to play an important role. Education has to make us aware of this grim reality, if mankind has to survive the threat. However, the immediate threat of complete extinction manifests in the form of nuclear holocaust, the need of our time calls for the 'pacification of education'. In other words, Peace Education would not only make us aware of the threat but also would lead to the questioning of the legitimacy of the prevailing order. Because, this awareness may very well initiate the enquiry of who owns the means of mass destruction. Creation of such an awareness would be the initial step in finding an alternative sustainable path of development.

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