

The Environment and Agriculture

BEHIND THE ALARM

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Most people who read at all, whether only popular newspaper, magazines, paperbacks, or also learned journals and books of a scholarly kind, must have been impressed and indeed overwhelmed by the torrent of highly dramatized statements and announcements currently sweeping over the printed pages about the environmental doomsday.

The most amazing thing about this worldwide phenomenon is that responsible and farsighted medical people, biologists, zoologists, botanists, researchers on urban development, climatologists, oceanographers and so forth have been reporting for decades on damages done to the human environment and have warned of the growing dangers to human well-being and welfare. Practically nobody listened, nobody cared. Now, suddenly, all this is in the headlines and all over the world people have become shocked and terrified. Why all of a sudden? What is so new about all this? What has happened just now to provoke such an abrupt outbreak of panicky popular concern in so many countries around the globe?

One of the factors that may have played a role in this sudden awakening of a global concern about the human environment was probably the experience of mankind with the huge series of atmospheric atomic bomb tests which have fortunately now been banned. Those man-produced mushroom clouds with their dangerous fallout carried around the earth by winds and sea currents and seeping into plants, cattle, and even into mother's milk made mankind at once aware of the terrifying power our technology has acquired over the whole realm of terrestrial life and of the fact that we have just one globe to live or to die on.

This consciousness and this concern must have been reinforced and sharpened to a considerable extent when a few years later mankind had an opportunity to look at the globe in its totality from the 'outside'—when television screens everywhere conveyed to the eyes of many hundred million astounded viewers the sight of Mother Earth the Beautiful, of that self-contained and lonely sphere drifting in space, covered by interwoven arabesques of blue oceans, green and brown continents, and white clouds—with no sign of human life visible at that distance but apparently the only place within myriads of miles in space where conditions for human life prevail. The cold and emptiness of the cosmic avenues through which the rockets of the astronauts sped and the deadly grey aridity of the moonscape when they first set foot on the moon rounded out the picture in a very impressive way.

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Man exploits nature's resources rapaciously. Often it is unavoidable. No one will ever see these falls again, but many will use electric power obtained from its sacrifice.

But the psychological impact of these recent experiences conveyed to and indeed impressed on mankind through the all-pervading channels of contemporary mass media would have hardly sufficed in itself to produce this sudden awakening of environment-consciousness and environmental concern had not a much more basic material process acquired such awesome dimensions that nobody could overlook it any more. This process happened to be the exponential growth of industrial production—and of waste and garbage on the very same scale.

If anybody has money to put in a bank where a yearly interest of 5% is paid, i.e. where the money increases at the rate of 5% per year, he will find that in about 13 years his money will have doubled. Simply by the law of compound interest,

anything that grows at the rate 5% a year will produce, within not much more than a decade, an additional volume equal to the original amount that existed at the beginning of the period. Now, industrial production has been growing for quite a while in very many industrialized countries of the world at a rate of about 5% per year, and nowadays this is not even regarded as a particularly high growth rate. As an American economist put it recently, this means, for instance in the case of the United States, that the amount of goods and services has grown by as much since 1950 as it grew in the entire period from the landing of the Pilgrim Fathers in 1620 up to 1950. In 1957—only 13 years ago—the gross national product of the United States was \$454 thousand million. In 1969, in constant dollars, it was \$728 thousand million. That is an increase by nearly \$300 thousand million in the yearly output of tin cans, electric power, automobiles, paper, chemicals, and all the rest, accompanied by a proportionate increase in the output of tin cans thrown away after use, of vapours, fumes, soot blown out from smokestacks and automobile exhausts, and of all sorts of garbage and refuse piled up or poured into lakes and rivers. In a sense it is not the awakening to the dangers of pollution and environmental deterioration which came all of a sudden—it is pollution and environmental deterioration of such eye-, nose- and lung-hitting dimensions that was nonexistent a relatively short time ago and that was dumped on us as a kind of malignantly compounded interest of contemporary industrial growth and development.

There is, however, a very manifest danger of emotional over-reaction to this serious situation—a sort of Luddite machine-smashing, putting the blame on scientific and technological development as such and propagating some kind of 'return to nature' as an avenue of escape, just as if nature were in its alleged 'purity' the best friend of man. Granted that mankind needs to preserve in some well-chosen places particularly beautiful and edifying natural landscapes in their untouched natural state and green squares and parks as breathing spaces in his cities, granted too that he should not prey on any of the remaining species of living creatures to an extent that would lead to their complete extinction, and that he should be extremely careful not to exploit those natural resources that can be replaced at a rate that makes replacement impossible; and furthermore that he should think at all times of maintaining a balance in his environment, making it a livable place, and a place worth living in—granted all that, reverence for 'virgin nature' and extreme conservatism are not attitudes that can show us the way out of the present dilemma.

What is dirt, filth, garbage? Well, it is simply any kind of stuff, any kind of material in a place where it should not be. The notion of a 'pollutant' encompasses any kind of misplaced matter or even energy (heat, noise, radiation) which is thus disturbing to man because of its whereabouts. The essential point to observe is that the criteria for what constitutes dirt, filth, garbage or pollution are determined by man's environmental needs, by the conditions for human health and welfare, by demands of human beings and nothing else. To take an extreme example, faecal matter is, of course, not dirty or filthy as long as it is contained in the intestines where it should be as the end product of the normal process of digestion, neither does it constitute dirt or filth in the sewage system which serves to collect and convey such matter to the right place, nor if it happens to be spread as dung and manure over the fields where it is needed for agricultural production. However, if dropped or seeping into any unwanted place it constitutes a particularly offensive and unhealthy type of refuse.

Except in a poetic or romantic sense, it is fairly meaningless to speak of any 'purity' in nature. Nature as such is neither pure nor dirty. Rotting and putrefaction are as much part of nature's processes as the production of sweet fragrances

and one does not go without the other. Nor are unaltered products of nature necessarily the best for human beings. Driving back nature has from the very beginning been a precondition for human survival and development. Thus, man is the measure for everything, including pollution. Oil bubbling up from the ocean floor, an entirely natural process which occurs in a number of places without any intervention of human industry, can pose problems quite similar to those which pollution of the sea by oil spillage or the flushing out of oil tankers on the high seas produce.

What man needs for his development, for his survival at the present stage of his proliferation over the globe and of the complexity of techniques needed to sustain him is a certain equilibrium between man-made systems and natural systems ; between the exploitation of his resources and their replenishment by nature or by human effort in opening up new sources of energy and matter ; between the transformation of his natural habitat and the preservation of those elements in it which are needed for his well-being. The point of equilibrium is subject to shift with development. Originally several square miles of relatively fertile natural surroundings were needed to sustain a small human family wandering around to gather whatever 'consumables' it could find. Nowadays the man-made system of agriculture permits the production of food for thousands on a square mile of land, though some endowments of the natural environment had to be transformed, others reinforced, and still others eliminated for this purpose.

It's man's own task

The real problem arises where the consequences of the transformation of nature, of the interaction of man-made and natural systems have not been foreseen or have not been provided for—where we suddenly find that man's exploitation of natural resources has wrought damages in the environment which neither nature's own forces can repair nor human efforts can overcome except perhaps at a prohibitive price and at the cost of other efforts destined to enhance human welfare and well-being.

Nature itself has a wonderful capability to take care of environmental disequilibrium, even of waste and refuse produced by human industry—up to a point. Winds, bacteria, physico-chemical forces such as corrosion, rusting and other forms of oxidation break up and 'recycle' into natural processes much of the fallout of industrial civilization. However, natural forces in the service of environmental restoration are not omnipotent—neither quantitatively nor qualitatively. Great rivers can absorb a very considerable amount of pollutants and 'clean' themselves, that is to say restore the original quality of their water, while running their course. By crumbling up, diluting, dissolving and depositing various ingredients of pollution they make them accessible to decomposing forces of oxidation and fermentation, to ingestion and assimilation by micro-organisms, plants, animals, and even man himself. However, there are limits to what even the greatest river can do with waste and refuse, how much and what kind of waste and refuse it can 'break-down.' Most organic offal of natural origin whether from plants, animals or human beings understandably fits well into the metabolism of nature and is decomposed relatively easily ; at the other end of the scale we find such wastes of industrial civilization as discarded aluminium cans, ceramic and plastic containers, and certain refuse from the metallurgical and chemical industry which could pile up for ever. In between we have an enormous amount of various other types of garbage which can be decomposed and 'recycled' by nature only at a much slower pace than civilization piles them up.

Thus, man can count on nature only to a moderate extent to repair damages which he himself has brought about in his environment. Or rather, the restorative forces of nature have to be handled by man as most valuable natural resources of a limited kind which he can use only very thriftily. For the rest, he must regard the maintenance of his environment as his own task—very much like the maintenance of his machines since, likewise, he cannot expect that they will bear an unlimited amount of wear and tear, restore and regenerate themselves without his constant care and toil.

A very balanced and realistic approach is needed to the problems involved in the deterioration of the human environment. It is not simply a matter of developing and applying scientific standards, norms and technologies for fighting pollution, nor of cursing industrial civilization and preaching some kind of 'return to nature.' Let us not forget that man in his 'natural state' had an average life expectation of less than 30 years, was mercilessly exposed to hunger, cold and all sorts of absolutely 'natural' illnesses and ravages—it is in the highest industrialized societies, and only there, that man can now expect on the average to live 70 years or more, and that millions—though as yet by far not enough millions—can enjoy welfare and well-being unattainable on any lower level of economic and technological development.

As to the development and application of scientific standards, norms and technologies for fighting pollution and all sorts of environmental deterioration, here again it has to be taken into account that man is the measure for what could and should be done : costs and benefits have to be considered in the whole context of human development.

When England developed its industry in the eighteenth and nineteenth centuries, an industry based to a considerable extent on the 'coal from Newcastle,' it could have hardly put into motion all those wheels driven by huffing and puffing steam engines had it then taken up simultaneously the task of filtering and eliminating all the soot and fumes and vapours which were blown out by the smokestacks of its primitive factories. The standards, norms and technologies for fighting the pollution which materialized in the ill-famed London fog arose out of the same industrial development that had polluted the air to such an extent. Now, this does not mean that countries which are today in the first stages of their industrial development should repeat all the mistakes the pioneers of industrial development made at earlier times and that no great efforts should be made to apply contemporary scientific standards, norms and technologies to the prevention of pollution from the very beginning of industrial and urban development wherever they occur today. However, costs and benefits have to be carefully considered because excessive demands—even with respect to environmental care and prevention—can also act as brakes on development and stifle it. There is, however, no doubt that environmental considerations have to play a much greater part in development planning, especially also at the earlier stages of industrial and urban development, than has been the case up to now because the sorry experiences of the 'pioneers' must not be repeated.

Currents of air, flows of water do not respect national boundaries. Neither does animal life, vegetation, or pestilence for that matter. The treasures of the oceans and of inner and outer space are the common heritage of mankind.

Although a very great part of the efforts for the preservation and betterment of the human environment and for the prevention and elimination of the damages to it must be handled within the boundaries of the nation-states, there is no doubt that colossal tasks remain to be solved and can only be solved by international action

and international organization. As the President of the Ford Foundation, an institution that has long supported the environmental sciences, rightly stressed in a recent essay, one of the first tasks the international community has to undertake is to ensure the compatibility of the national systems for monitoring, collecting and storing environmental data. An intellectual consensus has to be achieved concerning the key phenomena to be observed and the quality indices to be established so as to obviate the dangers of poor and nonexistent linkages between national arrangements for collection, storage, retrieval and exchange of environmental data—data that are equally needed for planning, prevention and action on the national, regional and global scale. Then, even assuming that each nation will independently pursue research and experimentation in remedial actions, “information on work in progress, as well as on results and understandings, however tentative, must flow freely across the political boundaries” because “there simply is too little time, brain power, and public money for nations to operate either in a chauvinistic or unconsciously introverted fashion ; or for countries to run up blind alleys trodden earlier by others or remain ignorant of promising approaches under scrutiny elsewhere.” Finally, “when the necessary intellectual mobilization begins to yield operational applications, there will surely be an opportunity for shared international effort. The developed countries will have their traditional obligations vis-a-vis the emerging countries, and new patterns of international law and management seem likely to be required with respect to our priceless, collective, oceanic, inner- and outer-space assets,” wrote McGeorge Bundy in the Saturday Review.

The Secretary-General of the United Nations stated recently that “for the first time in the history of mankind there is arising a crisis of worldwide proportions involving developed and developing countries alike—the crisis of human environment.” He added the warning that “if current trends continue, the future of life on earth could be endangered.”

We are not prepared

We cannot say at present that the United Nations, the whole world organization encompassing also an important number of great specialized agencies, is well prepared to cope with this crisis. True, the General Assembly of the United Nations has authorized the Secretary-General to proceed at once with the preparation of a “United Nations Conference on the Human Environment,” to be held at Stockholm in 1972. As is only natural, there is hardly a specialized agency within the United Nations system which does not have a direct interest and involvement in environmental problems. However, the problem is of such overwhelming magnitude, involves so many complex political, social, cultural, economic and technical questions and such a tangle of national or sectoral interests which present themselves in so many different forms on the various levels of socio-economic development, that only an unprecedented effort of coordination and cooperation within the United Nations system itself and still more between the world organization and its member states or indeed all the nations around the world can provide a real chance for a satisfactory solution.

Maybe it is just this global character of the environmental problem, this global demand it puts to mankind, that will prove to be beneficial in the future. After all, man has acquired considerable mastery over nature on a global scale but no comparable mastery over his own affairs, certainly not within his most immediate communal or national surroundings, still less in the international context. However, the concerted worldwide political, social economic, scientific and technical effort needed to cope with the environmental crisis may compel man to achieve just that—a mastery over natural and social processes which can ensure a sounder and happier life for all who live on this beautiful and solitary globe, the only hospitable place for man in the infinity of space.