



Technical

Discussions



Washington, D.C.
September-October 1971

Provisional Agenda Item 18

CD20/DT/3 (Eng.)
18 August 1971
ORIGINAL: ENGLISH

ENVIRONMENTAL POLLUTION

HUMAN HEALTH, HUMAN VALUES, AND HUMAN ENVIRONMENT

by

John J. Hanlon, M.D.
Assistant Surgeon General
U.S. Public Health Service

HUMAN HEALTH, HUMAN VALUES, AND HUMAN ENVIRONMENT

It is a privilege to be invited to address the Directing Council of the Pan American Health Organization. I am well and long familiar with its notable history of accomplishments. Meetings like this provide an opportunity to review achievements and failures, to assess changing circumstances, and hopefully to obtain new impetus for solving problems. The mounting winds of changing circumstances make this especially important at this time, and it is essentially this of which I wish to speak.

It is now quite clear that rapid change, and the hazards and imbalances, the stresses and disruptions that inevitably accompany it, is the order of the day. This is true for us in public health, for our communities, for our nations, and for our world. One manifestation of the need and desire for change from grossly unsatisfactory circumstances is the crescendo of expressions of disorder and dissent. True to history, this is especially true where youth is involved. Young people around the world are questioning traditional values and increasingly rejecting traditional concepts of progress and equity. And regardless of their tactics, strategies, or the length of their hair, these "children of change" are forcing us and our established institutions into a long overdue reexamination and reassessment of our concepts, priorities, goals, and methods.

Many have attempted to analyze this spirit of dissension. Social scientists tend to agree that its root cause in this and most other countries is to be found in the seeming inability and unwillingness to adapt ourselves and our institutions to the changing world which man himself, with his amazing technological genius, has created. Margaret Mead, the noted anthropologist, says of our generation that "we have immigrated into an age for which we are essentially unprepared, and we are trying to make do with outmoded forms."

The disharmony between technological and institutional change is, of course, at the root of the environmental problems which confront us, and these in turn are intertwined with and form a part of most of the social problems of the day. It was put very well by C. P. Snow(1) in his book The Two Cultures and the Scientific Revolution. His most telling point is that, as history routinely and regularly records, because the scientific community and the political community could not get sufficiently on each other's wavelengths, one advanced civilization after another has sooner or later collapsed.

This, I think, is part of what the young people - who were born into a world of convenience gadgets, television, nuclear fission, and space travel are trying to tell us - that the problems of pollution, urban decay, and wasted resources are more important and in a very real sense are closely related to all of the other social and economic problems of our rapidly changing times and circumstances - that is, to the world they are inheriting from us.

Dubos(2) and others have pointed out that, through the ages, changes occurred so gradually that man as a biological species had ample time to adapt to them. Beginning about 1000 A.D., however, when man first began to use the forces of fire and water to multiply his own limited efforts, and coming to forceful fruition during and since the industrial revolution of the late 18th and 19th centuries, the types and rate of change of the forces with which we must react have simply burgeoned. With reference to specific types of change, man now finds himself confronted not by one but three critical threats.

The nature of these three threats, I think, is obvious. First, and very much on man's mind, is the threat of thermonuclear catastrophe. I feel uncomfortable in the knowledge that the various nuclear powers have fabricated and stockpiled the equivalent of 25,000 pounds of high explosives in the form of fissionable bombs for every man, woman, and child on the face of the earth. It is extremely doubtful, however, if even the utter insanity of widespread atomic conflict would literally eliminate mankind. The question would be whether the terms of survival would be worth it; or if the physical and genetic damage with which survivors would be confronted would be such as to cause them to envy the dead. There is little point in dwelling upon this further at this time.

The second threat is that of environmental catastrophe. Why should we - physicians and other types of health workers - be concerned about the environment. All too many of us, I fear, have a very limited view of our responsibilities, concentrating on the diagnosis and treatment of obvious illnesses and injuries which really represent but the tip of the iceberg. Actually our concern should be for the total interface between man and his environment. Its potentials may serve for good or for ill depending upon whether man learns to respect and use his environment wisely or, as increasingly seems to be the case, he abuses it.

What is man's environment? Unfortunately, when the terms environmental health or environmental pollution are used, most people, including many physicians, think merely of heaps of refuse or clouds of murky air. My environment is everything beyond my skin and sensory organs - the air I breathe, the water I drink or bathe in, the food and food additives I consume, the medications administered to me, the cosmetics and cleansing agents I use, the sounds I hear, the light I see by, the odors and gases I inhale, the clothes I wear, the structures in which I learn, work, or live, the streets and highways I traverse, the people with whom I associate and who increasingly press in upon me - all of these and more constitute my environment, and each of them may serve as a comfort and blessing or as a hazard or curse. This was emphasized early in Hippocrates' classic "Airs, Waters and Places." He and others recognized that illness and injury result from abuse, that any abuse of man's body or psyche must have a source, and that, since this is ultimately the environment to which man is ecologically so related, consideration must be given to man's total ambience in order to fully comprehend and be truly effective.

However, when scientific and technological medicine began its ascendancy in the late 19th century, diseases were increasingly considered phenomena unto themselves, intrinsic or internal as to cause, consequence, or cure - sort of free-standing entities and enemies.

Man, in turn, was viewed as a free-standing subject or target, a "case" to be dealt with on a mechanistic or push-button basis if possible. Spin the wheel and choose a specific pharmaceutical. Remove the defective carburetor or pump and install a new one. The essential fallacy of this approach was that it overlooked the fact that man, his environment, and everything in it were really interdependent parts of a single ecosystem. One consequence was that the adaptive or reactive aspects of man and his so-called diseases, which really are nothing more than attempted biological accommodations, tended to be ignored. Meanwhile, that same burgeoning science and technology was effecting sociological and environmental changes at a breathtaking pace, which we now see bear frightening potentials, not only in terms of man's way and quality of life, but even his very ability to survive.

The accelerating magnitude and seriousness of environmental abuse is no longer debatable. An adequate description of what has been happening during recent decades would require far more time than is available. However, a few reminders may be permitted. The pollution of our planet's air, land, and water is rapidly worsening. Threats from unsafe foods, water, drugs, chemicals, and a variety of consumer products are rapidly increasing. In this and many other countries, the essential quality of life, especially urban life, is deteriorating into a morass of environmental problems so complex as to appear almost beyond solution.

Let me remind you of the millions of tons of toxic matter released annually into the air, the billions of tons of solid wastes discarded each year, and the enormous amounts of agricultural, industrial, and human wastes, as well as the 10,000 annual oil spills, that are spewing into and killing the earth's precious waters.

These contaminants have been incriminated in an ever-lengthening list of pathologies. Let me also remind you of the planetary ubiquitousness of pesticides; the multiplicity of insufficiently tested products and processes; the extensive unfinished business in the proper sanitation of water, food, and milk; the insidiously increasing types and amounts of radiant energy to which we are exposed; and the crescendoing cacophony which jars our eardrums and nerves at work, at play, during travel, and while trying to rest and sleep. The world clamors for new miracle drugs, for various food-enhancing additives, and for a myriad of convenience products; and science, industry, and advertising naturally respond, but at what known and unknown risks? Despite the best efforts at testing, standard setting, and other controls, many of these products are prematurely

marketed, with the result that they may, and in some instances do, produce unforeseen undesirable side effects and even potential genetic threats. Thus, one of the greatest dangers is the insidious way in which many of these substances may produce changes. Furthermore, what they may contribute in terms of the total body burden, synergism, and potentiation to which modern man is being exposed has only recently begun to be explored. An example: We know that a cigarette smoker has about 10 times the risk of dying from lung cancer than a nonsmoker. We know that asbestos workers have 20 times the risk of lung cancer as compared with other people. But it is now known that the combination of cigarette smoking and working with asbestos is not the sum of the two risks, it is 92 times as great. And we also know that if substantial and prolonged automotive air pollutants are added to the picture, the risk multiplies several times more.

This leads logically to the third of the critical threats to man's continued existence. While it is true that natural forces like storms and earthquakes can upset the environment, when we talk about environmental abuse or pollution we are actually referring to man-effected abuse and pollution. In this sense, therefore, man is the chicken (i.e., the determinant) and environmental abuse or pollution is the egg (i.e., the consequence or result). Since we are dealing with a true closed system, with finite limits and resources, it necessarily follows that there must be a practical limit to man's numbers. Failure to recognize and act upon this represents the fundamentally most dangerous threat of all - the risk of population catastrophe. Indeed, the rapidly swelling, uncontrolled, irresponsible, and animalistic tidal wave of human protoplasm and its proclivity for concentration appear to be the root causes of all of our problems. Suffice, at this time, to emphasize briefly a few points. It took about two million years up to 1830 for homo sapiens to reach his first billion. It took only a hundred years from 1830 to 1930 to add the second billion. It took little more than 30 years to add the third billion. By 2000 A.D. it is estimated that we will probably have six to seven billion and by that time will be adding another billion every five years. Some euphorics claim this is not a problem. The consensus judgment of demographic experts of the planet's adequate carrying capacity of humans varies between two and a half and four billions. Already we have passed the upper limit; starvation and strife are rampant; and, as I noted, we are aimed at six to seven billion by the end of the century.

A group operating under the name of "World Dynamics" has been feeding environmental and demographic data into computers at MIT seeking short- and long-term forecasts, and it is depressing to note that, no matter what possible course of action is fed into the circuits, the answers so far have been invariably pessimistic. In other words, as mankind becomes overwhelmingly numerous and more densely crowded, as he continues to use up and abuse his environment at an ever more rapid rate, as in the process he produces ever more physical, chemical, biological, and psychological hazards and stresses on the land he lives on, in the food he ingests,

in the air he breathes, and in the water he drinks, one has ample cause for concern about the immediate and long-range results.

It is well to remember that in his book, "The Freudian Ethic," Richard La Piere(3) of Stanford University indicated that "in the Freudian concept, man is not born free with the right to pursue life, liberty and happiness; he is shackled by biological urges that can never be freely expressed and that set him in constant and grievous conflict with his society. Life to him must be an unhappy and unending struggle to reconcile, both within himself and between himself and others, forces that are inherently antagonistic." In this sense, La Piere states frankly that his thesis is "that many of the changes that have been occurring in our society are malfunctional and they will if they continue uncorrected constitute our road to disaster." One may agree or disagree with this thesis, but certainly no thoughtful man would argue with the conclusion that "if man fails in the battle with the bugs, is overwhelmed in the flood of babies, runs out of topsoil, smothers in smog, or in some one of the various other ways fails to solve the problems of social adaptation, it will be only because he has given up trying."

It is not in the nature of man, however, to give up trying. To the contrary, over the ages, in company with the rat, the reptile, and the roach, he has been remarkably successful in preserving himself against the hazards of the natural environment. But will he continue to be preserved in the face of the hazards of the man-made environment? By now it is becoming ever more clear, as Dr. Marcolino Candau(4) indicated several years ago, that despite his current surge in numbers, man too is approaching the state of an endangered species.

The question arises, therefore: What must we do? It strikes me that man's problems are reducible basically to three:

- (a) his problem of understanding and living with himself,
- (b) his problem of understanding and living with his fellowman or society, and
- (c) his problem of understanding and living with his environment or ecosystem.

Actually, these are all part of a single basic factor, "ethics." If man could develop the ethical constitution he should have, resulting among other things in a wisdom and willingness to temper a desire for the maximum conveniences, pleasures, powers, and gains at the moment for the assurance of a future, none of the three problem areas would persist. This will require a careful and deep reassessment of priorities by all of us. Government, of course, in any society, attempts to provide a synthesis. But even statesmen are products of their time and tend to view the world

through the same eyes as their contemporaries. And government in a complex society is subject to the same pressures toward specialization that affect other institutions and individuals.

Max Ways(5), writing in the February 1970 issue of Fortune Magazine, discussed this problem in great detail, and sums it up in this way:

Here we come to the root cause of our abuse of the environment: in modern society the principle of fragmentation, out-running the principle of unity, is producing a higher and higher degree of disorder and disutility.

He further indicated that the problems of the environment (and I think we could generalize that to include all the problems of our society) are due not so much to decisions made as to decisions not made.

Somehow we are going to have to find ways to create a synthesis - ways of assuring that all of the systems and subsystems that we devise to maintain ourselves on the planet work together for the total benefit of all the people, and that they enhance rather than degrade the environment on which all of us depend.

Can our institutions meet this challenge? One thing certainly is clear. As the ecologist Sears(6) has said:

No form of life can continue to multiply indefinitely without eventually coming to terms with the limitations of its environment Every wise gardener knows better than to crowd his luck by crowding his plants too closely. Even the most aggressive organisms, such as weeds, rodents, and noxious insects, do not increase and spread indefinitely.

He then makes an observation which is most pertinent to today:

. . . . Certain conclusions are plain. Stress and sacrifice of freedom increase with crowding. They also increase when energy is added to the system, as it is happening to human society with the extravagant use of fossil fuels and internal combustion engines.

One final word of caution is called for. In his excellent and provocative paper, "The Tragedy of the Commons," Garrett Hardin(7) emphasizes the importance of truly worldwide concern and action on the problems of overpopulation and environmental abuse. He uses as an analogy the situation in an open common grazing area. The individual herdsman looking over the fields sees livestock belonging to a number of individuals. Responding to an all too human desire for more profit, power or status he reasons, "With all these animals grazing here, it will not make any

significant difference if I add one or several more." Now he knows that land can be overgrazed and eventually ruined, but the enticements of his self-centered present cause him to push the thought aside. It would not be so bad if he stood alone. The tragedy is that many or most of the other herdsmen react likewise. The result is the destruction of the commons and eventual loss to all.

There is an important lesson in this for all of us. Members of all of the societies and nations of the human species - especially those responsible for government, industry, theology, public health, education, and, especially, public information - all those who play such determinant roles in the very life and future of mankind, have now reached a point when a critical decision must be made - a decision which no degree of euphoria or optimism can allow to be delayed any longer if man is to survive. Something has to give. Either together we face biological and environmental reality and take rapid and forthright steps toward the deceleration of the increase in man's numbers and concentrations while concomitantly re-constituting, preserving, and protecting our planet, or we must accept the inevitable loss of our hard-won gains and assure the ultimate triumph of the four apocalyptic horsemen.

Let us fervently hope that the nations of this planet, the only one we will ever have, will make much more of the U.N. Conference on the Environment than either an exercise in erudite semantics or a contest in self-seeking provincialism. Either will be fatal. Meanwhile, let those of us privileged to devote our lives to the concept of public health regain and retain our dominant voices with reference to the environment in which man must somehow survive.

References

- (1) Snow, C. P., The Two Cultures and the Scientific Revolution. Reedited 1964 as Two Cultures and a Second Look. Cambridge U. Press.
- (2) Dubos, Rene, Man Adapting, New Haven, 1969, Yale Univ. Press.
- (3) La Piere, Richard, The Freudian Ethic, New York, 1969, Duell Sloan and Pearce.
- (4) Candau, Marcolino G., Man's Health in Relation to the Biosphere and its Resources. Paris, France: UNESCO House, Sept. 4, 1968.
- (5) Ways, Max, "How to Think About the Environment." Fortune Magazine, p. 98. Feb. 1970.
- (6) Sears, Paul B., "Pressures of Population: An Ecologist's Point of View," What's New (Abbott Co.) 212:15, 1969.
- (7) Hardin, Garrett, "The Tragedy of the Commons," Science, 162:1244-1248; Dec. 1968.