

Social Crises and Their Connections to Global Ecological Problems

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1. SOCIAL ROOTS OF THE GLOBAL ECOLOGICAL CRISIS *

The planet and all its inhabitants are today threatened by a potential global ecological crisis that is all the more dangerous because it is insidious, consisting of many separate problems with little immediate effect on daily life, but whose cumulative impact and interactions may suddenly break upon us, rendering significant parts of the planet less productive or inhabitable. Because of the time lags involved, this crisis will only become apparent when it is too late to avoid much of the damage. We could be condemned, not to a return to some primitive past, but to a much more desolate and limited future, a science fiction version of the dark ages that followed the collapse of Roman civilization, with hordes of refugees over-running stable communities in search of the means of survival. Our only hope is to have the wisdom and the will to anticipate the dangers and to change in time our goals, our behaviour and even the direction in which our civilization is moving.

A brief summary of some of the most evident problems shows what we are facing. The damage that organohalogen compounds are causing to the stratospheric ozone layer is well documented and control measures have already been put in place, although the worst of the damage to life on the earth's surface from the resulting ultraviolet radiation is yet to come. The threat of global warming from accumulating greenhouse gases, and the accelerating loss of the planet's biological diversity, have both led to the adoption at the Rio Earth Summit in 1992 of international conventions which at least provide a framework for addressing the problems, even if the political will is not yet there for effective action. The consequences of transboundary air pollution, such as acid rain, have been addressed regionally, at least in Europe and North America, but the problem is growing in size in some of the most populous regions in Asia. The full extent of the threat from the increasing quantities of highly dangerous and persistent substances, both toxic chemicals and radioactive materials, is far from being understood or appreciated. We can expect many more unpleasant surprises, not to mention the burden we shall be leaving for future generations. We are using up the absorptive capacity of the environment for many pollutants; when that capacity is gone, pollution problems will accelerate drastically. With our expanding population and often excessive levels of consumption, we are drawing down the resource capital of the planet, its soils, freshwater reserves, forests and fish stocks. Living off capital only postpones and aggravates the shock that must come when the capital is exhausted. Our technology is out of control; each new development seems justified in isolation, but we seem incapable of standing back and looking at the cumulative impacts. As Bahá'u'lláh warned over a hundred years ago, our material civilization, if carried to excess, would become as prolific a source of evil as it had been of goodness when kept within the restraints of moderation.¹

It is easy to go in detail into the nature, the causes, and the frightening potential consequences of these and other environmental problems threatening the world. However, this has already been done often enough, and we do not need to be further depressed. In this series of seminars, I propose to take a more constructive approach, first analysing the characteristics of our society that have allowed such a situation to develop, then considering the changes in the ground rules of society (our basic values) as a necessary step in the move towards sustainable development, and finally to suggest some new approaches to

integrating ecological, economic and spiritual factors in society, in order to respond to the challenges we face. The methodology comes from the science of ecology as applied to the human social organism, the concepts are largely inspired by the evolutionary analysis of social and spiritual development and the new solutions proposed in the works of Bahá'u'lláh (1817-1892) and those who have elaborated on them.²

The social roots of the coming global ecological crisis lie largely in the very structures of the present organization of society and the values inherent in the way they function. The most important of these structures are the nation state and the productive economic units, whether public enterprises or private multinational corporations and businesses. We have divided up both the planet and our economic activities into independent units in which the decision-making processes are not bound to consider anything beyond a narrowly defined framework.

Governments control a geographical unit through the exercise of national sovereignty, which leaves each nation free to use or dispose of its resources and its people as it desires. While this century has seen the gradual development of some international codes of conduct and legislation, these must be voluntarily accepted by each state, and even then only have moral authority. International enforcement mechanisms are still very weak, as world news reports illustrate daily, and the erosion of the principle of national sovereignty has been slow and limited largely to the less powerful countries. Self-interest is still the principal rule in international relations.

Large scale productive economic activities have also been institutionalized in enterprises or corporations whose defined function is to carry out some productive activity. The management of these enterprises is held accountable to the owners for the success of the enterprise. For private owners or stockholders, success is defined as the financial return on the investment; where the owner is the state, financial goals may be mixed with broader social goals such as employment (another mechanism for distributing wealth).

In both cases, the institutional structure does not require the managers to consider more than questions of internal efficiency. In democracies, governmental leaders are accountable for the state of the country and its economy, not the state of the world. In other types of government, it may only be the state of the party, the army or a powerful elite that counts. Corporate executives are accountable for the growth in corporate profits, not for larger social or environmental goals (although keeping customers happy may require some attention to the corporate image). Economists define wealth very narrowly in terms of what they can express in monetary units and trade in the open market. Everything else is an externality that is not measured and thus not managed. In the consumer society, the public is educated to the same set of materialistic values; status is defined by what you can buy. The only important things are whatever the corporations can make money by producing and every effort to increase demand for these things is legitimate.

The problem with such a system is what it leaves out. As presently structured, economic goals frequently do not correspond to social or environmental goals. There is no money to be made in developing medicines for the diseases that affect poor people, who cannot afford to buy them. A healthy environment is only of economic interest if it attracts wealthy tourists; otherwise ill health increases spending and growth in the health care sector. There is no profit in setting some resources aside for the needs of future generations. In present economics the future is so severely discounted that beyond a decade or two it does not count at all. It is economical to increase productivity and thus reduce employment. Unemployment is economically desirable in that it helps hold wage levels down, although if carried too far it can also reduce consumer demand. We have privatized employment, but left unemployment a public responsibility. Narrow economic goals can even be contrary to the public interest. For instance, it is to the economic advantage of tobacco companies to develop an addiction to nicotine in their customers.

These are structural problems inherent in the nature of present systems, and the structures are an expression of the dominant values underlying society. Both the communist and capitalist systems share a narrow materialistic view of human requirements based on 19th century values. Happiness is to be achieved by meeting basic physical needs and desires. The social and spiritual dimensions that distinguish humans from all other creatures are largely disregarded. Communism tried to organize all the productive machinery to meet the material needs of society, but collapsed from the inherent inefficiency of any centralized system carried beyond a certain scale. Capitalism gives priority to efficiency at all costs, but with a Darwinian view of the survival of the fittest that accepts as normal the failure of the rest, with all its social consequences. The logic of free enterprise and the free market favours the accumulation of wealth by the most materially successful which necessarily leads to an increase in corresponding extremes of poverty, whether of nations or people. Yet while failure and extinction may be natural (in a Darwinian sense), they are no longer socially or spiritually acceptable in today's society. All governments try to temper the extreme logic of the system. In fact politicians are the only ones who must juggle the requirements of a narrow economic system and the other, often conflicting, demands of society.

In this context, the roots of the global ecological crisis become clearer. Our present civilization is driven by institutions that will only consider the environmental (and social) dimension if forced to from the outside. At the national level, democratic systems do pressure political leaders to consider and legislate for these broader concerns, but globally there is no such political constituency. Only the institutions of the United Nations and similar international bodies have made some effort to temper the global social and environmental impacts of the present system. However the gap between the needs for global action and the means available was well illustrated by the United Nations Conference on Environment and Development (Rio de Janeiro, June 1992). The action plan, Agenda 21³, adopted there estimated that an additional \$125 billion in international financing was required annually to shift the world towards sustainable development, yet less than \$10 billion in pledges was forthcoming, and international support to many efforts has actually decreased.

The threat of global warming is a good example of the linkage between the social crisis represented by the inadequacy of present economic and institutional systems, and a major dimension of global ecological problems. Carbon dioxide, one of the most significant greenhouse gases, traps heat in the atmosphere and helps to maintain global temperatures within the limits suitable for life. It is linked with oxygen in the cycle of photosynthesis and respiration that drives almost all life on this planet, and that produced the present composition of the earth's atmosphere. Carbon dioxide levels have risen significantly since the beginning of the industrial revolution, due largely to the use of fossil fuels like coal and oil, together with extensive deforestation releasing the carbon trapped in wood. While it is not now possible to predict the speed at which the resulting global warming may take place, the international scientific consensus is that there is a high risk of significant changes over the next century resulting in enormous impacts on agriculture, coastal areas and natural systems.⁴ It is estimated that carbon dioxide emissions must be reduced by at least 60% to reduce the risk of catastrophic change, yet our material civilization is addicted to fossil fuels, and the withdrawal symptoms of economizing on energy use and of shifting to other energy sources will be traumatic. The powerful economic and political interests represented by the oil companies, the oil producing countries, the automobile and transport sectors, the petrochemical industry and all the others dependent on fossil fuels who risk losing their income, their investments and their power from such a change, are an enormous inertial force blocking effective control measures for carbon dioxide. In addition to the self-interest of such powerful groups, there is the difficulty of achieving change in a global system without global institutions of governance. No one country wants to risk unilaterally establishing controls such as carbon taxes that would put its industry and economy at a competitive disadvantage, yet achieving global consensus in the face of such strong opposition will be very difficult. Our civilization is out of control, and cannot even respond to threats to its own survival.

How did we get into this mess? Its origins are in the rapid social and technological evolution of the past 150 years. The new technologies of transportation and communications have transformed the social environment, eliminating the old limits to the movement of peoples, products and cultures. Just as islands tend to evolve unique species and ecosystems, so have the past limitations in the movement of people and ideas fostered the development of many "islands" of language and culture at a scale that formed the cores of modern nations. Bridging islands produces a mixing of species and destabilizing of ecosystems, and the similar removal of physical barriers between nations has created a new global scale of interchange and competition. The weedy species that are superior at colonizing disturbed land are paralleled by the "weedy cultures" of communism and capitalism that have profited from the destabilization of traditional societies to spread (and compete) around the world. Yet the qualities that facilitate a rapid spread and quick establishment are not necessarily those that provide competitive advantage in building stable, increasingly efficient societies.

There is ample evidence that cultures and social systems evolve just as species do. Where the growth and functions of an organism are determined by its genetic heritage, those of a society are controlled by its value system. It is the application of those values that determine the structures, forms and institutions of the mature civilization. Societies that become too rigid and specialized cannot adjust fast enough to changing environmental conditions and are driven to extinction, while societies with new "mutations" in their value structure may be better adapted and thrive.

One of the prominent symptoms of the social transformation initiated by our changing environment has been the general turning away from the established religions which gave traditional societies their values. These religions too became so locked into old structures, rituals and dogmas that their core values were largely hidden and their power of spiritual transformation lost. The result has been either a general loss of religious belief and its replacement either by selfish competitiveness or by a belief in the power of science and rational thought, or a return to fundamentalist movements which have proven particularly vulnerable to manipulation for political ends.

Another consequence of the technological revolution has been an increase in our power to master, exploit and transform our environment and its resources. Where it was difficult in the past to clear a forest with only stone axes or to level a mountain with a shovel, such feats of environmental transformation are now daily occurrences. This increase in individual power over nature, coupled with the rapid rise in population brought on by similar revolutions in food production and medical science, have increased the level of human impacts to the planetary scale. We have so disturbed the earth and its life-support systems that we have no alternative today but to learn to manage them at the global level, even if we are still far from understanding them in all their complexity. Our technological power has outstripped both our wisdom to use technology wisely, and our ability to construct institutional structures capable of managing our own behaviour at this new global scale.

There are many historical examples of civilizations that overshot their ecological limits or failed to adjust to changing conditions and collapsed. Rocky hillsides once covered in forest, barren landscapes stripped of their fertile soil, irrigation schemes lost to climate change or salination, abandoned sites of once-powerful cities, all stand witness to the difficulties faced by all societies in achieving sustainability. There is nothing to prove that we have escaped from this vicious circle. If anything, we have accelerated the processes involved, and extended them to the global scale where there is no possibility of escape to some new frontier. Many of the processes involved, including our own population growth, are following geometric progressions so well symbolized by the example of water lilies in a pond doubling every day; at first only a small part of the pond surface is covered, but by the time the lilies cover one quarter of the pond, only two days remain before the pond is entirely covered. It will take only a few environmental problems approaching those rates of growth for a severe crisis to break much faster than anyone realizes.

The social deficiencies of present society have generated a series of global trends which could easily converge and interact in a massive ecological crisis for which there would be no quick technological fix and no escape.

Our only hope is for a radical change in society, not just in its economic systems or governmental structures, but in the basic values people are prepared to live by and to incorporate in their social and economic institutions. What kind of change is required, and how it can be achieved, will be considered below.

2. VALUES AS THE DRIVING FORCE FOR ACHIEVING SUSTAINABLE DEVELOPMENT

The growing scale and impact of environmental problems with their roots in industrial society has led many to question whether development is really compatible with environmental protection. A majority would probably say that if we must choose then we should go for development. But can we really live without the environment? For how long can we privilege the short term and ignore the long term? And even where we have put development first, this has not always worked. The model of economic development pursued in many poor developing countries for the last few decades has failed. A few have succeeded in taking off economically, but growing environmental problems may still threaten the gains realized. The economies of central and eastern Europe are attempting a painful and difficult transition to a market system, but with a sense that much is being lost in the process. On top of this, estimates of the planetary resources available suggest that there may not be enough for all the present population to reach the standard of living of Western countries, assuming present technologies and efficiencies. Even in the advanced industrialized countries, leaders are trying to keep their economies on course towards "growth" as if it were an absolute good, but growth cannot continue forever in a closed system, and the planet is ultimately a closed system. Nowhere is there a clear idea of where all this is leading. There is no vision of what we want or how to get there.

The closest thing to a global consensus on where we should be going is the concept of sustainable development as launched in 1980 in the World Conservation Strategy,⁵ publicized by the World Commission on Environment and Development (the Brundtland Commission)⁶ and developed in considerable detail in Agenda 21, the action plan adopted at the UNCED "Earth Summit" in Rio two years ago.³ While there are hundreds of definitions of sustainable development, the most widely used is development that permits the present generation to meet its needs without impairing the capacity of future generations to meet their needs. Agenda 21 and the Rio Declaration adopted at the same time were accepted by nearly all governments and many world leaders as a plan for what the international community needed to do to achieve sustainable development. Agenda 21 includes specific recommendations for action by governments and international organizations, and even a rough estimate of the financial resources required to implement it. But while there was a consensus on the needs, the community of nations failed to agree on the means for its implementation. There was a clear lack of political will reflecting a preference for national over international priorities, and possibly a fear that national public opinion was not yet ready for the implications of the required social change. In summary, what we have today is a general concept of sustainable development that includes a process for meeting human needs and a temporal dimension of respect for future generations, together with an action plan of many specific activities that should somehow lead in that direction.

Even more fundamental is our inability to agree on what development really is. Often it is just assumed to mean an increase in some economic indicator such as Gross National Product (GNP), but should it include something more? Should development have a social, cultural or even spiritual dimension? Should people be sacrificed for the economy, or is the economy ultimately there to be of benefit to people? The word "development" implies movement, but towards what? Is it just the satisfaction of basic needs, and

what are "basic" needs: food, water, shelter, education, employment, good health, freedom, peace and security, happiness? Is there a fixed point at which development is achieved, or is it a constantly moving target? In the absence of any shared ideals or concepts of future society, development is clearly a relative term for which each culture, class, race, religion and national group, if not each individual, will have its own definition.

"Sustainable" is just as difficult to define. It is much easier to identify what is unsustainable, and most actions today are in fact aimed at eliminating some unsustainable trend or form of behaviour like our rapidly-growing population, the destruction of a renewable resource or a steady increase in levels of pollution. Sustainability really is a kind of dynamic balance in society, rather like flight, resulting from the elimination of all the sources of imbalance in a constantly changing environment. Sustainability requires balance in movement because our society is in constant movement, if only through the continuing succession of generations. Such sustainability or balance is thus relative in time and space. It is easy to imagine sustainability over a short time and distance, but today the only relevant dimensions for sustainability, given the present extent and speed of demographic, technological and social change, are over the indefinite long term (say 500,000 years) and the entire planet.

It should be clear from the above attempt to define sustainable development that any definition is ultimately a question of values. Development and sustainability can only be defined in terms of what society considers important. The significance of this is that values can also drive development towards sustainability. Values are what help us to determine what we are and where we want to go. Values are the very matrix from which social forms and structures are born. Values are not just ideals such as love, justice or truthfulness in the abstract, they are the rules for all human interrelationships that define our basic interactions and determine the levels, intensity and effectiveness of social organization. For instance, justice as a defining value for society means that in every relationship and interaction, the situation of both sides should be known and the balance struck that best meets both needs. The ideal market based on full knowledge of supply and demand, can be seen as an application of the principle of justice. A society intent on applying the principle of justice will design mechanisms and institutions to implement justice at all levels of social interaction, from the distribution of wealth to the balancing of freedom and social responsibility. The graduated income tax, for example, is a mechanism to implement social justice. Usually it is necessary to balance values that may appear in opposition. Justice and forgiveness, for instance, can require quite opposite actions, with the former perhaps more appropriate for social institutions and the latter for individuals.

New values are like social mutations, that open up new potentials for social evolution. This can be seen most easily in the history of religions, where, in the progressive revelation of fundamental social values, each religion has had a particular creative function in society. Moses, for instance, emphasized the rule of law, with a clear punishment for breaking the law, a principle that fostered the great flowering of Jewish civilization and others around it. Jesus came at a time when law and government were firmly established in the Roman Empire. He emphasized love and forgiveness, qualities that were singularly lacking in Rome and that allowed for a significant advance in individual spiritual development. Muhammad brought a new balance between the individual and the social through emphasis on submission to the will of God and other values that led to the development of the modern nation. Bahá'u'lláh has placed justice as the central principle necessary to build a world civilization.

The new global social environment created by science and technology requires a new (or renewed) set of values that will define the required social structures and institutions which will in turn achieve what we call sustainable development. Many of these values can be found down through history and are common to all the great religious traditions, even if they have not always been applied as fully as they should have in peoples' daily lives. There is, however, a unique emphasis in the central importance of justice that is

particularly appropriate to this age. Justice is the principle that requires balance, just as sustainability itself is a question of balance. Justice at the world level requires equal attention to the needs of all the world's peoples, and the harnessing of all the world's resources to meet those needs. It thus leads logically to a concept of world citizenship, recognizing the oneness of all humankind. Justice for future generations requires moderation in our present material civilization, so that fundamental environmental balances are not disturbed and adequate resources remain to meet future needs. Justice requires equality of opportunity between men and women, allowing each individual to fulfil his or her potential to contribute to society, and thus to generate wealth for all. This would in fact be a more appropriate measure of development than any economic statistic. Justice also requires the elimination of the extremes of wealth and poverty both within society and between nations through a more equitable sharing of burdens and resources, while it also requires protection of the freedom of initiative of each individual as the best guarantee of efficiency and creativity in society. Justice in its essence means valuing and protecting diversity, and thus overcoming the prejudices that today prevent the full development and expression of many cultural, racial, ethnic and religious groups. This is a fundamental challenge, as many national communities are presently being torn apart by conflicts based on intolerance of such differences. This diversity is also required for development, which must be adapted to the many environmental situations around the planet. It would be ridiculous to impose the same social, economic and technological pattern in a small tropical island, a teeming third world city, a European village and a nomadic desert community. Sustainable development must inherently be a decentralized, diverse and flexible process.

States will not accept the global solidarity necessary to resolve planetary ecological crises unless they see a just distribution of the burdens and sacrifices required. This in turn will require the application of the concept of economic justice at the planetary level, since environment and development are so closely interrelated. The effort required to achieve a significant reduction in the extreme differences of wealth between countries will be enormous. The best recent example is that of one of the wealthiest countries that undertook to assist a country in transition to reach its own level. Despite the fact that the two parts of Germany share a single language and culture, and differed only in 45 years of recent history, the effort required and the shock to the economy and society of the transition have been very large and are still continuing. How much greater will be the stresses and sacrifices necessary to resolve the problems of the poorest developing countries. Yet the instability produced by allowing such extreme differences to continue will eventually require global action of this sort.

This raises the most fundamental issue in the transformation needed to achieve sustainable development. How can people be motivated to rise above their own short-term self interest and to make the necessary effort? What force can bring about such a change in society? There are fortunately historical examples that prove that societies can and do make such fundamental changes. Some have been forced upon them by external attack or a serious threat. Others have come through the effort to resolve an internal conflict that threatens to destroy the society. These often require an exceptional quality of leadership to push the society into changing, and they may be temporary if the new values do not have time to take root. More fundamental are the transformations brought by new religions, that have, within a few decades or centuries, altered the very foundations of society by changing or renewing their value systems. Such changes have led to the flowering of whole new civilizations.

The transforming force of religion in its purest form results from its central concept of love for something beyond the individual and the society, whether called God, Allah, Nirvana or any of many other names, but which generally is unknown and unknowable, beyond the realm of complete human experience. This turning outward with positive feelings of love for the unknown and unknowable replaces the usual fear of the unknown. It liberates each individual who makes the effort to cultivate it so as to be able to explore the unknown potential in him or her self. It replaces the prejudice that is fear of the unknown in others by a desire to encounter the diversity of human experience. It is this mystical or spiritual dimension that

gives force to a set of values and intellectual concepts, and provides the strongest motivation for change. Thus the educational process required to cultivate this feeling, whether through prayer, meditation or other means, is not an irrational escapism, but an exercise to release human potential, including the knowledge of our own selves. It is on such spiritual foundations that any fundamental change must be based.

Such a transformation in individual values can then catalyze the social changes necessary to allow society to confront and resolve the challenges of sustainable development. For instance, consultation becomes an essential social mechanism to apply justice, by hearing all sides and searching by consensus to find the way that best balances all the conflicting interests threatening sustainability. The same process can work equally well at the local, national and international levels. But while a new set of values and motivation are necessary preconditions for moves towards a sustainable global society, we also need practical steps to bridge the very different worlds represented by the present economic, ecological and spiritual dimensions of society. This is the subject of the next section.

3. NEW APPROACHES TO INTEGRATING ECOLOGICAL, ECONOMIC AND SPIRITUAL FACTORS IN SOCIETY

Our present civilization is driven largely by the criteria of economics. Emphasis is placed on what can be bought, traded or calculated in monetary terms, and the statistics like GNP that measure how well we do this. Yet the analyses above have shown the links between social and environmental problems, and the importance of values as the basic rules governing society. What are the relationships between each of these components, and how can they all be linked together? Something is needed to help us go from theory to practice. A holistic framework is required that provides a mechanism to integrate all the factors in social organization, making sense out of the complexity and identifying the key parameters for action.

One approach is to draw inspiration from both ecology and economics in order to take an abstract systems view of any social (or natural) functional system or component, whether an organism, a rural village, a corporation, a national economy or the whole planet. Any such system, which we can call an eco (from oikos, Greek for house or place) has boundaries, some content or capital, and possible inputs and outputs including the energy necessary to drive it. While the detailed characteristics of such systems are too elaborate to describe here, the most important feature of any eco is not its size, richness of materials, or the extent of the flows involved in its functioning, but the way it is organized and the intensity and efficiency with which its parts are connected, which might be called its information content and connectivity. This information is what makes the difference between a beautiful poem and a meaningless collection of the same letters. The information or sense of the poem remains the same whether it is written or spoken, stored in ink symbols on paper or in binary codes within a computer memory. It is independent of the forms in which it is stored, communicated or used.

Take a watch as an example. It might be mechanical or electronic; from the outside it might be hard to tell. The function is the same even if the mechanism differs. What really counts is the knowledge that has gone into its design, and the skill and precision with which it is manufactured. A good watch will tell time very accurately and reliably. However, if you hit either watch with a hammer, the quantity of materials will not have changed, but their organization and information content will largely be lost, and the function, and thus the value of the watch, will have disappeared. The significance of any eco is its function, which depends more than anything on its information content.

This theory of ecos illustrates a principle, which is the converse and complement of the second law of thermodynamics, and which explains why we are all here. Ecos are functional systems that can use the energy that drives them to generate and accumulate information in terms of increasingly complex and

efficient structures and operations. This is why the long-term trends in evolution are always towards increasing complexity and efficiency. The ultimate eco within our experience is the human being and human societies, for which the capacity to collect, store, manipulate and use information is the most distinguishing feature. When ecos reach a size or complexity that exceed economies of scale and become inefficient, then the larger systems are subdivided into nested sets of subsystems, just as our body is made up of cells combined in organs and systems through which the whole organism functions. We also see large corporations reorganizing into smaller functional units, and large computers being replaced by networks of smaller ones. The fundamental characteristics of ecos are common across biological, social and astronomical phenomena.

What is important in this theory for the theme of this seminar is the central role of information in any system. Information (broadly defined) is in fact the real wealth of any functional system, and in particular social systems. Civilizations are defined much more by their knowledge, culture, science, laws and values than by their material wealth. We are moving into an information age, where mastery of information will be much more important than material wealth. Yet we still continue to measure progress and development in monetary terms, perhaps because we have not yet developed good measures of culture, wisdom and other attributes of the effective use of information.

Economics only measures and manages one limited attribute of a functioning eco, but it is far from sufficient to manage such a complex system. Economic accounts need to be in balance for sustainable development, but so do many other kinds of accounts. We worry about financial debt, but we need to be equally worried about the accumulating resource debt from the misuse and degradation of our soils, forest, freshwater and fisheries, since human ecos must draw their materials from, and return them to, the natural and managed environments of the planet. There is also the pollution debt represented by the future costs to society to clean up the mess we have made of our environment, not to mention the human debt accumulated in all those who have not been properly fed, housed, educated or employed, and who are therefore unable to contribute their potential to the productive and beneficial activities of society. All of these debts need to be repaid and a balance found in each type of account, if human social ecos are to reach their full functionality and productivity. Underlying this is the spiritual dimension, for it is the moral principles and values that determine the most effective human relationships and functions in any social eco. The higher the individual moral rectitude and motivation to be of service, the greater the effective level of interaction and information use.

The concept of ecos shows how the ecological, economic, social and spiritual dimensions of society are interrelated and interconnected. We need to measure and manage all these dimensions of society, not just the economic one. We need to measure, manage and foster information content, connectivity and flows, since they are the basic determinants of wealth and sustainability. On a planet that is inherently limited, information is the only thing that can grow forever. Above all, we need to put people back in the centre of our concerns, since development and sustainability are for people, and people are the ultimate stores and users of information. Even information stored in libraries or computer memories is used largely to support the functional activities of people.

Survival and development in a human eco means maintaining and if possible increasing its information content. But since no one lives forever and generations are constantly succeeding each other, that information must be transmitted, making education one of the most important functions in any society. Any failure in the educational process will lead to social decline or disintegration. The fulfilment of human potential must therefore be renewed with each generation. This is the real meaning of sustainability as an expression of the most important human values.

This more integrated framework for the assessment and management of human society, which values people at its centre, requires a review and reconsideration of all human institutions and social concepts. Space only permits mentioning a few here. In order to fulfil human potential, work should be seen as an essential service to society, an obligation equivalent to worship. It therefore follows that society should provide everyone with the skills necessary to make a constructive contribution, as well as the means to use those skills to earn a living. Unemployment is a serious waste of productive potential. Careers as presently defined also do not make sense in this new perspective, since they generally use only some fraction of each individual's capacity, and that capacity changes throughout a lifetime. Retirement also is a waste of the most highly trained and experienced capacity. What older people may lose in physical abilities is compensated for by long experience, which could be valuable in education. The best measure of development would be how well the society uses all of its human potential.

Similarly, human institutions need to be judged by how effectively information flows and is used within them as they perform their social functions. There is a universal tendency for bureaucracies to grow, become bloated and inefficient, accumulating many disfunctions. When this happens to biological organisms, nature has only found one solution: reproduction followed by death. Any institution that has outlived its usefulness should be mercifully dispatched. Based on empirical observations of countries like Germany and Japan, and the United Nations, the useful lifetime for a governmental bureaucracy appears to be about 40 years. In private industry, corporations either renew themselves or perish when faced with competition. In the past, governmental bureaucracies were largely renewed by war and revolution, but hopefully we can find some less painful alternative.

There are many more implications of this approach to our present social, economic and environmental crises that cannot be developed here. What is clear is that a renewed set of values and ideals can lay a spiritual foundation that releases a new potential and establishes the ground rules for the evolution of a whole new set of social relationships, structures and functions better adapted to the new environment of the technically advanced, globally integrated civilization that is now beginning to take shape. The process cannot easily be planned, because there are no set models to follow. But if the values and motivations of the people involved are right, we can be optimistic of the ultimate outcome. Your countries in transition have a unique opportunity to avoid exchanging one outdated heritage for another, and to chart a new and more constructive path towards an environmentally safe, humanly satisfying and sustainable future.

REFERENCES CITED

1. Bahá'u'lláh, *Gleanings from the Writings of Bahá'u'lláh*, London, Bahá'í Publishing Trust, 1949, no. CXLIII, p. 342.
2. see for example: Bahá'u'lláh, *Kitáb-i-Aqdas*, Haifa, Bahá'í World Centre, 1992; 'Abdu'l-Bahá, *Secret of Divine Civilization*, Wilmette (USA), Bahá'í Publishing Trust; Shoghi Effendi, *The World Order of Bahá'u'lláh*, Wilmette (USA), Bahá'í Publishing Trust.
3. *Agenda 21: the United Nations Programme of Action from Rio*, New York, United Nations Department of Public Information, 1992.
4. see the reports of the Intergovernmental Panel on Climate Change, 1991 and 1993.
5. IUCN/WWF/UNEP, *World Conservation Strategy*, 1980.
6. World Commission on Environment and Development, *Our Common Future*, Oxford, Oxford University Press, 1988.