



GRACE, KENNEDY FOUNDATION LECTURE 1996

**The
Environmental
Dilemma
in
Caribbean
Context**

Elizabeth Thomas-Hope

Preface

When the Grace, Kennedy Foundation was in the process of selecting a subject for the eighth lecture in its programme, it might have seemed that we were beating a much trodden path in deciding on a familiar theme: the Environment and that buzz word 'Ecology.' Within the past five years these have become - and properly so - very popular subjects of public lectures, seminars and media treatment. Yet the Foundation took the view that this decision was appropriate for two reasons.

One was the conviction that too much attention cannot be devoted to the perennial problems in this area, which confront us in Jamaica and other CARICOM States. The other reason centred on the fresh perspectives which the lecturer, Professor Elizabeth Thomas-Hope, was likely to bring to the subject from her past experience and, most appropriately, her position as holder of the Grace, Kennedy endowed Chair in Environmental Management.

This is a wide-ranging lecture, encompassing some facets of the environmental problems and issues, which are not normally addressed. She begins by introducing her audience and readers to the notion of 'environmental crisis'; but essentially this is not a crisis of nature, rather of human behaviour. She observes the role-played by the environment as it influences the development of self and the need to emphasize the interrelationship between people and their environment. This interrelationship is often overlooked, subsumed under, or subordinated to the Western perspective of the environment as a resource for human use.

Flowing from self-centredness in the concepts of right, power and ownership, is an emphasis on materialist values and the commodification of aspects of the environment. Issues relating to the environment involve acute dilemmas over the conflict of goals. Among the most critical of these dilemmas is that which exists

between 'development' and the nature of poverty, both factors having significant effects on the environment. As Professor Thomas-Hope emphasizes, small island states are particularly vulnerable to eco-system destruction.

The Lecturer concludes with suggestions for a 'green-print' for the future, based to a great extent on the need for a change in values. This requires, *inter alia*, a revolution in the approach to education.

Professor the Hon, Gladstone E. Mills, OJ, CD
Chairman
Grace, Kennedy Foundation



Elizabeth Thomas-Hope

About the Lecturer

Jamaica is a country that tends to attract superlatives whether mention is being made of its natural beauty, the athletic prowess of its people, the number of churches per square mile, the quality of its coffee - and so much more, admirable or regrettable.

A recently added superlative should alarm all of us - that our country in the last ten years has had one of the fastest rates of deforestation in this hemisphere. The degradation of our environment will soon negate the superlative beauty, which has been our consistent reputation ever since Columbus wrote about it.

In the face of that sad reality, the Grace, Kennedy Foundation has decided this year to sponsor public discussion of this modern crisis. Once again, good fortune has attended our search for a

presenter. An in fact we have not had to go too far afield to find her.

Professor Elizabeth Thomas-Hope is already a member of the Grace, Kennedy family, so to speak. She is the first James Seivright Moss-Solomon (Snr.) Professor of Environmental Management at the University of the West Indies, Mona. The Chair is endowed by the Grace, Kennedy Foundation.

Professor Thomas-Hope is a daughter of Jamaica, and was educated at St. Hilda's Diocesan High School, Brown's Town. She then studied overseas at The University of Aberdeen (M.A. [Hons.] Geography); Pennsylvania State University [M.Sc. Geography with Computer Science]; the University of Oxford [D. Phil. School of Geography].

She has taught at universities on both sides of the Atlantic: City University of New York; Pennsylvania State University; University of London; University of Liverpool.

She has written two books on Caribbean migration and co-authored a best selling text book: *A Geography of the Third World*; she has edited other scholarly works, including *Perspectives on Caribbean Regional Identity*.

In addition to her academic work, Professor Thomas-Hope has taken a keen interest in handicapped children and has spearheaded efforts to establish a facility for a holistic approach to the education of children with special needs on the Mona Campus of the University of the West Indies.

We are pleased to have such a distinguished and qualified person to present the 1996 Grace, Kennedy Foundation Lecture on the subject **The Environmental Dilemma in Caribbean Context.**

Rev. C. Samuel Reid
Chairman,
Grace, Kennedy Foundation Lecture Committee

Introduction

The Nature of the Crisis

THE ENVIRONMENTAL CRISIS, which we face today, is essentially a crisis of humankind, not a crisis of nature. It reflects the severe anxieties people feel about their ability to manage the Earth for the health and welfare of their own generation, as well as for future generations. It is a crisis of over-dependence on science and technology to solve environmental problems by some and a total ignorance of science by others. It is a crisis of confidence in people's ability to deal with the changes, which they have induced, in the ecosystem. Most of all, it is a crisis because people do not really believe that society can be changed so fundamentally that it will make any difference.

The environmental literature, including the reports of the World Commission on Environment and Development (WCED), has stressed that we are close to thresholds, "that cannot be crossed without endangering the basic integrity of the natural system". Concerns have been expressed by the UN General Assembly about 'trends that, if allowed to continue, could disrupt the global ecological balance, jeopardize the life-sustaining qualities of the Earth, and lead to an ecological catastrophe'. These concerns set the terms of reference for the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992. The document, which ensued from the conference, avoided suggesting any ultimate limits to growth or what these thresholds in the risks of environmental catastrophe might be. The extent of the crisis remains unknown. Yet the fact that a crisis exists is evident. Small islands are particularly vulnerable to ecosystem destruction because the opportunities for species or habitats being compensated for by other species is reduced by scale, and because sea level rise due to climate change could threaten the viability of even the existence of some small islands.

The Spatial Dimension of the Crisis: Global and Local

The nature of the crisis is both global and local, and it is clear that changes in ecosystems at one level of scale impact upon those at other levels of scale.

There is known to be a threat of climate change. The increase in the volume of fossil fuels consumed adds dramatically to the production of greenhouse gases and the possible trend towards global warming. The depletion of the ozone layer caused from the emission of chloro-fluorocarbons (CFCs) from some aerosols, refrigerators and air conditioners, is known to allow harmful rays of the sun to penetrate the earth's atmosphere, presenting a threat to human health. The loss of vegetation is known to affect not only rainfall, but also the extent of photosynthesis occurring in an ecosystem, and thus the possibility of interfering with the food chain. We fear the impact of poisonous gases in the air and we breathe and the effect of acid rain, which scorches the vegetation on which it, falls. We fear that just as the dinosaurs which once reigned supreme over their particular environment became extinct due to environmental change, so too the human species could become extinct and that insects or sea creatures could 'inherit the earth'. At the local level, environmental degradation is causing the increased threat of flooding, reduction in the resource base; unhealthy conditions from polluted and infected air, water and land.

The Time Dimensions of the Crisis

The time dimension is significant in two major respects: first, the increasing rate of degradation and second, the imperceptible change which occurs in environments before the significance of change is recognized. In terms of rate of change, the revolution in technology, especially since the middle of the century, has speeded

up the process of contamination, the production of waste and the use of fossil fuels for energy to the extent of constituting a technological revolution. Regarding the imperceptibility of change, an example is provided in the case of ozone depletion, which had reached an alarming level before the role of CFCs in damaging the ozone was recognized. Another factor to be taken into consideration is the rate of regeneration of ecosystems, which is usually very slow. In many cases, the changes are irreversible. For example, primary forest cover is never re-established; not can extinct species ever be recovered.

There is sufficient anxiety worldwide over these and other matters, to have brought about an international movement attempting to grapple with the issues. At both international and local levels the questions are being asked:

- What can be done about the damage to the environment?
- Was there ever a golden age of environmental management, and if so, can we learn from it how to manage the environment more successfully?
- Can we expect the crisis to pass and what will happen to human existence on Earth if it does not?

All the questions which ask how the crisis should be tackled raise dilemmas. Meanwhile, increasing populations, urbanization and degradation of the ecosystems, increasing poverty levels within societies, increasing exploitation of resources and production of waste continue.

The Human Factor in the Crisis

A fundamental element of the crisis is that people strongly believe in *their* right to use as many natural resources as *they* wish, to cut

down whatever trees and do whatever *they* wish on *their* land, to explode nuclear test bombs if *they* deem it necessary for *their* security. Self-centredness in the concepts of right, power and ownership underlies these attitudes which also reduce everything to material values. Why should this be so?

First, people are extremely slow to change their views and it is very difficult to overcome self-interest. Second, there is a conflict between technology and science on the one hand and the state of the natural world or nature on the other. There is strong, inherent belief that technology will solve the problems of environmental degradation and resource depletion, and that the progress of human society is continual and will necessarily proceed towards a higher goal. Third, the concept of the crisis is focused on the change in ecosystems which occurs, not because of their own intrinsic value but because of their usefulness in providing humankind with habitat, amenities, resources and a medium for the disposal of waste.

Whatever information we receive about the environment and the crisis in nature is set against our vested interest in the existing situation and what we already believe. Moreover, we tend to like what we believe. What we do about the environment depends on our ideas of the people-nature relationship, which we guard carefully and about which we avoid being too seriously challenged. To understand the nature of the crisis and how we behave towards the environment, we must first begin with an understanding of our perceptions and beliefs. The only likely answers to the environmental crisis lie in a change of values.

Definition of Environment

Let us begin by defining terms, though this is not necessarily easy. People refer to environment as though there were some agreement about what it is. Yet there is a wide range of interpretation and

variation in common usage. When you ask people in Jamaica about their environment, some immediately refer to the cutting down of trees, some to the problems of garbage and litter, some the problems of drains and the unhealthy conditions of stagnant water, the problems of sanitation in the inner city, while others even refer to the issues of safety and respectability in their community, the problems of crime, stress and tension. All are correct in referring to their environment in these disparate ways, for the environment is not a single or simple element but a composite of nature, 'man-made' structures and societal factors. However, the critical relationship is between people and nature. This relationship is mediated through the built environment as well as the economic, social and political milieu within which people live out their lives.

Such discussion emphasizes the fact that dictionary-like definitions of 'environment' are not sufficient for guiding our understanding of the relationships of humanity and environment. Those who simply mean the biological and physio-chemical systems of this planet refer only to part of the environment, though the impact of human actions upon these systems - the ecosystems - is central to the crisis over which there is now concern. The physical or biological world appears to change independently of human action or thought, yet at the same time it affects and limits the actions of people. There is a set of processes which intricately connect human beings with the rest of the environment though humans remain qualitatively different, since only they can create constructions of the environment in the mind, and by so doing understand what the rest of the world is like. It is only humans who ascribe meaning and value to the environment and its various elements. As Simmons put it, when we use the term with its fullest set of meanings, "it is rich, diverse, and illusive".

Environmentalism

As well as understanding the difference between ecosystem and environment, it is also important to understand the distinction between ecology and environmentalism. While ecology is a discipline concerned with the relationships between living creatures and plants within a particular habitat, environmentalism is a response to the threat, or the perceived threat, to the natural environment.

In expressing concern about pollution, the destruction of nature, the loss of amenity and the depletion of resources, environmentalism either explicitly or implicitly challenges existing assumptions and conventional wisdom about progress, which equates material prosperity with general well-being. In fact, this challenge amounts to an attack on the central values and beliefs of industrial capitalism. Most people have not rushed to embrace these ideas which were enunciated with such vigour in Western Europe and North America in the early 1970s. Society still clings doggedly to notions of economic growth based on high technology, centralization, the division of labour, materialism, and competition, none of which are necessarily in the interests of the majority of people or of the environment.

The Cultural Filter

Environmentalism is concerned with the way we see the crisis and try to deal with it. The clash of interests, which determines how different groups of people relate to and value their environment, is central to the environmental dilemma. Within the primary, overarching dilemma in the nature of the relationship of humanity to the environment, are the numerous questions concerning culture, materialist goals of society, contradictions in ethics and philosophy and conflicts in politics and power.

The remedies offered by environmentalists based on a change of values and ideas seem lame, romantic and even superficial in the current social and intellectual climate. The reason for this is principally that the main channel or epistemology (that is, approach to knowledge) by which we inform ourselves about our environment, animate and inanimate, is constituted by science. Science furnishes us with both a method to study the environment and a philosophy which tells us about our relationship with it. Anything 'scientific' is seen to be valid and is held in high regard, whereas anything 'non-scientific' is seen as being emotive, subjective, superstitious, discredited. In Western culture, science has become the repository of truth.

Science and technology are invariably in the hands of large corporations which convey the view that people's relationship with nature is one of domination and exploitation, and will continue increasingly to be so if good management techniques are employed based on technology. However, from the perspective of the ecologist and the environmentalist, people are seen as being essentially part of nature and in a reciprocal relationship with it. If we dominated rather than become an equal partner with our environment, then we will be in difficulty, because the damage which we do to the system will in turn inflict damage on us. In short, we are in and not apart from the system. We must be aware, therefore, that the answers we obtain from science will depend largely on the questions which we ask of it and the people of whom we ask them.

It is of primary importance to study not only the tangible, physical environment, but also the way in which different groups and individuals perceive that environment, and the nature of the economically, socially and culturally based perspectives which influence and condition that perception. Perceptions change over time and there are important variations in perception based on class, age, gender and ability, especially differing between the

dominant groups in society and those, which are marginalized. As the German philosopher Kant expressed it: "We cannot know the world as it is. We can only know the phenomenal world, that one presented to us through our senses and mediated by experience." Therefore, if people seem to believe firmly in things that appear to us wrong or, in this case, environmentally damaging, there may be little point in trying to convince them otherwise. Instead, it would be more fruitful to start by trying to understand why it is they thought that they were right in the first place. Then one can begin the process of change by trying to understand and subsequently alter the basis of the perceptions, images and beliefs, which condition their actions.

This lecture is intended to look at our own cultural filters, which condition our approach to our environment. I hope that it will encourage us all to engage in this process of self-education in the context of the environmental dilemmas facing us in Jamaica and the Caribbean today.

Environments Lost and Found

PEOPLE ARE ALWAYS LOSING AND FINDING, destroying and creating environments at all levels of scale: global, regional, national and local. In most cases, environments concern us only from a distance, even though the distance may sometimes be very small and the impact seem very close. While the environmental problem is in 'someone else's backyard', we can rationalize or simply dismiss its implications either ecosystem change and degradation, or for the human experiences involved. The meaning such an external environment conveys is almost entirely derived from received information and, whether in the form of scientific knowledge or popular news and views, it is based on observation external to ourselves: we receive it at the cognitive and intellectual levels.

In contrast, the environment can be deeply personal. It affects the individual and the group in acutely personal ways; it is not simply a landscape or ecosystem which is heard about or even seen and smelt, but one which is felt at the level of emotion. Indeed, the environment and various of its component parts also affect us so fundamentally that its influence is not even consciously recognized. The impact of our environment is metaphysical, affecting the psyche, the way we look at the world, what we perceive in all that is around us, and the meaning it transmits in the development of self-identity and relationships with and within the natural world.

Personal Environments

The way we feel about the environment reveals deep perceptual reality, as senses are only the receptors, not the interpreters, of what we perceive. It is clear from the psychological literature that adaptation to surroundings is as much a sensory and subconscious

experience as a psychological one, hence the perceived environment is as real as the objectively observed environment.

Even the consciously observed environment is subjectively perceived and differentially charged with meaning from individual to individual. Thus all the compound aspects from environment, its characteristics, properties and meaning, which individual perceive are arranged into some mental configuration which is projected on to that which they observe. The most incisive impact of the environment at the personal level occurs during the child's growth, especially in the early years.

The Child's Environment and Personal Development

Children in Kingston's so-called 'garrison' communities, where green is the colour of a political party, not of vegetation, grow up in an environment devoid of nature. The power, which they assert over their own environment, reflects inner anger rather than positive interaction. Cat, you kick; dogs, you stone; and birds, you shoot. They do not find a friend in any of these animals, nor do animals find a friend in them. Graffiti on the zinc fences are expressions of the existing power relations in the community. In this environment, children establish their consciousness of 'self' and develop their world-view.

The development of relationships with the environment proceeds throughout the child's growth at two different levels: one is the perceptual level and the other is the level of thought and imagination. The child starts by building up and using certain basic relationships such as proximity and separation; open and enclosed; comfort or discomfort; secure or frightening; safe or dangerous; special or commonplace; precious and warranting protection and gentleness or hostile and to be attacked and destroyed. In the child's later cognitive development. The specific properties and characteristics of the environment become consciously recognized.

Basic cognitions are eventually overtaken by knowledge at varying levels.

Before nature is understood by the individual at the level of scientific explanation, the landscape of childhood is already deeply embedded in the psyche. It is a vital aspect of people's lives. Memories of childhood environments convey symbols and meaning rather than a sensory recapturing of the actual environmental experience. Meaning, mystery and even superstition become interwoven with the trees and lakes and mountains that surround us.

Up to that stage, the relationship develops to a point where the behaviour is controlled intuitively. It becomes deeply intertwined in the development of the personality and concept of 'self' as well as the development of perceptiveness and sensitivity. The conceptualization of continuity in space occurs at an even later stage of the child's cognitive development. Continuity constitutes the final syntheses of all the elementary topological relationships fundamental to the concept of space and natural or built environmental systems and are learned subconsciously and automatically through experience.

The child takes into later life a subconscious position towards nature as well as a psyche and concept of self which has either been influenced by the natural world and positive images of nature, or which has been deprived of it. This subconscious attitude contributes significantly to the characteristics of the individual's entire world view. Where children already deprived of a sense of themselves in a natural world are further socialized within a hostile and abusive milieu, they become a potentially alienated sector of society.

The total social space is a product of both the social and physical aspects of the environment. Our subconscious and conscious

relationships with the natural environment are closely connected with the sense of integration or alienation, which the individual experiences within the environment.

Subconscious Interaction with the Environment

Aspects of the influence of the young child's interrelationship with his or her environment in subconscious behaviour and emotional status are illustrated by the results of two studies, one conducted in Britain by the psychologist, Terrence Lee and the other in Jamaica by the author. The journey to school of a sample of children aged 7 to 9 from a selection of communities was monitored, as were dimensions of the child's personality, from which indexes of emotional adjustment were measured for purposes of comparison. In summary, the child related to two environments that of home and school, but could not connect them perceptibly if the journey between them (especially if undertaken by public transport) was long and complicated. The journey became a psychological barrier which *separated* home from school and which tended towards poor adjustment of the child in school. Walking journeys on the other hand (or simple and secure vehicle journeys) allowed a psychological link, which *connected* home and school. The perceived separation or connection with home was an important factor in the emotional state of the youngest children.

The Jamaican rural children who walked to school tended towards a more coordinated sense of their environment and themselves within it. The rural journey also offered contact with nature whereby the child could experience an easy relationship long before the linkages and continuities within the environment could be absorbed at the cognitive level.

It was also interesting to note that there was no significant difference in environmental interaction between girls and boys. This suggested that gendered variations in the relationship with the

environment become part of the acquired or learned behaviour into which the child is socialized.

Gendered Approaches to the Environment

Without the experience of nature in early childhood, neither girls nor boys appear to exhibit an intuitive positive relationship with the natural environment. Likewise, with the early interaction of children with nature, both males and females develop in relation to their environment in similar ways. The later differences in male and female interactions with the environment are largely conditioned by the variable process of socialization and acquisition of later roles learned in childhood. While traditionally boys are encouraged to explore their environment and to be active outside the immediate sphere of the household, girls are discouraged from engaging in such activities. Instead, the environment of girls growing up is circumscribed by rules and regulations and invariably limited to the vicinity of the child's home.

Exploration, as part of the culture of masculinity, and play which encourages the climbing of trees and chasing of animals, give way later on to outdoor recreational activities and game sports such as fishing and bird-shooting/ The culture of masculinity and the roles of power which males are socialized to assume contrast with the culture of femininity based on caring for the household space and, where relevant, tending to domestic needs which require fetching water and fuel. These contrasting sets of learned behaviours bring about very different kinds of relationships with the environment.

Into the process of gendered socialization are embedded power relationships and concepts of the variable status and value in male and female activities, which are transferred to perceptions of different types of environmental interaction. Power over nature, domination and conquest, that is, the male characterizations of the relationship, are attributed high status in the society, while caring

for and tending the environment are accorded less prestigious status and worth. From the eco-feminist perspective, the argument is advanced that the notion of having right of domination of nature also finds expression in the idea of man's right of dominance over woman.

Subjective Views of the Objective Environment

Environment and Belonging

The personal relationship with environment is manifest in the sense of belonging, which develops in familiar environments that are associated with 'home'. Within this context, the environment is essentially an extension of people themselves.

A study which the author conducted in Jamaica, Barbados and St. Vincent showed that the preference for different types of environment over others was hardly determined by the intrinsic features of the place, or even by their comparative economic potential, but chiefly by an inherent sense of belonging to one or the other locality. This strong preference for and loyalty towards the home area was also found to occur in the United States and Western Europe.

Relationship with the environment is further based on the sense of having a vested interest in it. The lack of attachment to the environment in urban communities is associated with negative attitudes towards that place and little interest in the preservation of the environment. By contrast, Maroons in Jamaica are deeply attached to their environment. Their sense of identity is strongly associated with their environment and this influences the ways in which they relate to and try to conserve it. The value of their environment is based on the empowerment they derived historically from it.

Environment and Status

Environments are not only meaningful in terms of the sense of belonging and identity with which they are associated but also in terms of their perceived status. Different types of environment are given values such as up and down, good and bad, based upon notions of desirability. Besides, the concept of district or region, rather than ecosystem, commonly provides the mental framework for environmental images held. In Jamaica and Barbados, the parish is used as the unit of environmental identification, while in St. Vincent, environments are conceptualized more in terms of whether they are Leeward or Windward, North, South or Town. The parish or other locality is even epitomized in terms of specific characteristics of the environment.

In Jamaica, for example, the upland environments, notably of Mandeville and upper St. Andrew, are perceived to be of high status. The believed prosperity of the tourist zones of Montego Bay and coastal St. Ann enhances the perception of these landscapes. The 'fruitfulness' (associated with lush vegetation) of St. Mary and Manchester are regarded as desirable features, whereas 'too much rain' in Portland and 'too little rain' in Westmoreland and St. Elizabeth are characteristics which people considered as negative features. The peacefulness and lack of congestion found in the countryside by comparison with the town are to Barbadians and Jamaicans alike, among the more important considerations about their environments. In Barbados, the presence or absence of the sea is also claimed to be important, especially by those who live near to the coast.

In the Caribbean, the believed or actual popularity of an area to outsiders considerably enhances the local image of that place and, by extension, of the people who live there. The tourist's judgement, for example, has conditioned the value placed on certain environmental qualities. This view is in part accounted for by the

presence of tourist-related developments in some coastal areas, but it also reflects a genuine emotional attachment to the type of environment to which they are accustomed, rather than to the sole influence of its commercial potential.

By contrast, negative views exist with regard to other types of environment. The most important single factor in St. Vincent, upon which the negative stereotype of the northern region depends, is related to its proximity to the active volcano Soufriere. The Rabacca dry river valley is known to have been the barrier to southward escape during the devastating eruption of 1902 as the valley was quickly filled with a river of boiling lava. The memory of the tragedy lives on, so that the poor accessibility and relative lack of contact with, and information about the north nurtures an overwhelming sense of mistrust of the area.

There is more to nature than the sum of its parts, and while there are interrelationships in ecosystems studied by scientists, so there are properties in the environment experienced at the level of the emotions and captured only by artistic imagination. These intangible properties of place become part of the symbolic meaning of environments recalled by the individual through nostalgia.

Environment and Nostalgia

Nostalgia reflects the reconstruction of lost environments and, like the sense of belonging and identification with home and familiar or well-loved environments, is deeply personal. Nostalgia is the sense of belonging to a past, which is rooted in place; it is characterized both by events and environments. Moreover, nostalgia is not merely the memory of occurrences and environments but a recapturing of their meaning to the individual. Edward Brathwaite's migrant in an alien situation in an environment far from home asks

*.... Where is the bell....
that used to warn us,
playing cricket on the beach
that it was mid-day: sun too hot
for heads. And evening's
angelus of fish soup,
prayers, bed.*

Edward Kamau Brathwaite, 1967.

Relationships of this kind between people and the environment reflect the lack of any sharp distinction between the objective and the perceived environment. As the geographer, David Lowenthal stated: "We all subordinate reality to the world we perceive, experience, and act in. We respond to and affect the environment not directly, but through the medium of a personally apprehended milieu". Durkheim, the social theorist, recognized that nature is a precondition for society, even though separate from it. Society always has related to the environment and derived meaning from it through the images, which pervade consciousness and thereby condition attitudes and actions. Certain types of environment and the images that convey meaning about them have been so powerful that entire mythologies have developed in association with them.

Environmental Myth and Meaning

A myth, or collective image, is not necessarily a falsehood; it can be a truth, reflecting different levels of interpretation and conveying different dimensions of meaning. Environmental myths are important in reflecting people's relationships with the environment and, therefore, the ways in which they are likely to act within and behave towards the environment. Some common myths about the environment include those of the frontier and the environments beyond the frontier, where people are compelled to relate to their environment in new and different ways.

Frontier

The concept of the frontier in North America moving endlessly westward into the wilderness conditioned views of that continent and challenged people's response to it. Notions of unlimited space became associated with ideas of unlimited opportunity in the psyche of the North American settler. Conquering nature through capturing more and more territory was synonymous with power and the progress of Western civilization.

In some countries the image of the frontier is still real even today. Belize and Guyana, for example, have forested interiors which remain frontiers in their economic development; most of all, in the new concept of a resource for tourism. Even in the islands such as Jamaica, St. Lucia and Dominica the wooded interiors are becoming rapidly perceived as representing new frontiers for tourism.

The urban environments which have been created now present frontiers of the 'inner city' which need to be crossed in order to establish the rule of law, control and management. As we conquer environments or create new ones, so new frontiers are created. In the North American experience, the view of and policies for 'wilderness areas' were later superseded by the designation of outer space as the 'high frontier'. In most cases, the frontier is conceptualized as the transition zone or barrier between 'civilization' and 'wilderness'.

Wilderness

Wilderness is perceived as that environment beyond the frontier which, from the perspective of the outsider, is beyond the control and management of civilization. However, untamed nature to some is home and protection to others. What was wilderness to North

American settlers was home to the Indians. Far from being threatening, it provided them with security and a source of empowerment in the face of penetration from outside. The Australian 'outback' had the same connotation and the same significance for the Aborigines in the face of the intrusion of Europeans. The 'wilderness' in the settler colonies found its equivalent imagery in 'jungle' in tropical continental land masses and 'bush' in small tropical islands. The concept held by Europeans of 'darkest and deepest Africa' was based on the unfamiliarity and fear of the jungle, yet to the numerous tribes of that continent it was home, familiar and in need of neither discovery nor conquest. The Maroons of Jamaica found refuge in the 'bush' of the forested interior, as the Caribs did in the volcanic areas of islands in the Eastern Caribbean, notably St. Vincent and Dominica.

The myth of wilderness also extended to the inhabitants of that environment. As the animals and plants are regarded as wild, so in the past more commonly than the present, the peoples of the wilderness were regarded as wild, even savage. The perceived superiority of the conqueror inherent in the conquest of wilderness is fundamental to the power relations associated with the myth of wilderness, whereby the 'barbaric' and the 'civilized' are placed in opposition to each other. The challenge lies in the ability of the outsider to conquer wilderness by overpowering the one who remains empowered by the very environment itself.

The myth and mythology of wilderness, as also its counterparts, jungle and bush, are intensely anthropocentric (or people-centred) in their perspective. The classic example of this imagery is conveyed in the imagery of the Garden of Eden. It is a highly significant expression of anthropocentrism, that wild nature should be described in language such as 'garden' at the point where humankind is understood to be part of that environment. Immediately wild nature is perceived of as having been conquered, as though the 'first frontier'. The penetration of wilderness reflects

a culture of conquest, domination and exploitation of nature itself as well as the people who are already part of that natural order. In the frontiers, as in Eden, the newcomers attempt to vanquish the 'serpents' that present a threat to their activities and 'eat of the fruit' as they exploit the resources of their newly captured environment.

Paradise

The representation of wilderness as wild and dangerous nature to be conquered and tamed is in contrast to the imagery of paradise, which is exotic, safe and seductive. The inhabitants are 'different' but not barbaric. The limitless landscape of opportunity and challenge in the wilderness compares with the smallness of paradise, epitomized by the tropical island. The environment is vivid in its colours and sounds and it is limitless in its provision of resources. The intention is less to exploit nature and more to indulge in it. The activities in paradise could be described as 'laid back' and undemanding rather than the vigorous action needed in the conquest of wilderness.

The imagery of wilderness and jungle which are used in the mythology of the tourist advertisement lures outsiders to this environment that they are invited to enjoy. It appeals to the visitor because it offers an engagement with environment, which contrasts with that of their usual daily encounters. In the conception of paradise, tourists from the industrialized countries find a myth which they themselves have created and thereby an environment which they have constructed. They perceive in the tropical paradise of unspoiled nature an image of environment which they need and which they have lost. It is a powerful concept.

There is a negative side to the concept of Caribbean islands as paradise, associated with the infinite bounty of nature. For, despite the limited size of our islands, there is a sense of the existence of unlimited resources, which contributes to an attitude of wanton

waste. In Jamaica, the use of water and waterways, of trees and other plants, as though they were part of an endless cycle of replenishment conditions much of the behaviour towards and within the environment that one can observe in the country today.

The Myth of the City

The myth of the city creates a magnetic construction of the urban environment. Indeed, the rural person's belief in utopia as being found in the city is equaled only by the city person's utopia believed to be captured in the tranquility of nature in the rural setting. In the Jamaican case, the rapid urbanization of the 1960s represented a period of economic growth. The myth of the city is based on the concept of opportunity and wealth, as were the frontiers of the wilderness. An essential difference is that the myth of the city provides not a wild frontier, which demands brute force to conquer, but rather an environment in which civilization has already evolved and, if one is smart enough, one can share in the fruits.

The city then provides an anti-myth or a counter-myth to that of wilderness, jungle, bush. Yet the city without employment opportunities to match the numbers seeking them becomes degraded by the demoralizing effects of reduced food supplies, poverty, overcrowding, inadequate infrastructure, increased social pressures and the growth of crime. The myth of the city, therefore, also becomes a counter-myth to paradise. Not only did Marx refer to the inevitable alteration in society in the transforming of environment into value as resources, but also it has been a theme of many poets. William Wordsworth wrote of the dehumanizing forces of the industrial revolution in England, and twentieth century poets lament:

*Gone the old look that yoked him to the soil.
He is a new man now, part of the machine.*

His nerves of metal, his blood, oil.
Dylan Thomas, 1955.

*More houses, more parking allowed
More caravan sites, more pay and.... greeds
And Garbage are too thick strewn
To be swept.*
Philip Larkin, 1974.

The city dwellers soon begin to comprehend the environment that has been lost in contrast to that which has been found. Where space and resources permit, urbanites create gardens around houses so that nature can be preserved, but in the Western garden this is usually in a manicured, controlled and organized form. The need for communal parks, open spaces and green areas is felt, and these too have to be created. As urbanization proceeds and the urban environment becomes less manageable from the viewpoint of the municipal authorities, so the new frontiers of the inner city become evident; those who have the economic resources, begin the flight back to the countryside.

This recapturing of the rural takes at least two forms: one is the process of suburbanization, the other the frequent return to the country for recreation or respite. Suburbanization brings more and more green areas and the natural environment under residential development. This can be observed in an ever-expanding arc of residences around the Kingston Metropolitan Area. The return to rural environments is undertaken by the middle classes in particular as they seek refuge in the countryside on weekends and holidays, so that enlarged transportation arteries are required and, in the process of road expansion, more of nature is consumed.

Environmental myths, like all myths, contain elements of objective reality and scientific explanation as well as elements of imagination, nostalgia, hopefulness and hopelessness. These

images on which the myths are based are transmitted through the mass media, especially television, through the education system, books, advertisements, folk stories and superstitions. If the belief contains only the imagined without scientific information it is likely to be as short-lived and lacking in popular appeal as the beliefs based on scientific explanation but devoid of meaning or imagination. Both scientific information and deep intuitive feeling and experience combine to influence the images, which we hold of environments and their opportunities.

The Importance of Environmental Myth

The myth both reflects our feelings and knowledge about the environment and influences our relationship with and behaviour towards the environment. It provides a level of meaning towards about the environment, which exists in addition to scientific interpretation. This conveys an awareness of the sacred and the profane, the accessible and the inaccessible, that to be feared and conserved, that to be utilized and exploited. It suggests what is acceptable and unacceptable in terms of its use and sense of purpose and, therefore, its value and worth. Thus the myth is based on information, but contains more than information.

To the North American settlers, the idea of the limitlessness of opportunity and extensiveness of space largely conditioned their lavish use of territory in the development of settlements and the exploitation of resources. This could be compared with small countries such as Britain, where the myth of the 'countryside' is preserved as a means of holding on to nature and conserving what remains of an environment which has been substantially swallowed up by urbanization and industrialization. Green belts and green areas are protected by law, as are the hedgerows. Hedges and fences define the private space of each household. Environmental limits are an important part of the psyche.

With less loss of some environments and the finding of others, new mythologies are constructed. Not all myths protect the environment, as for example the frontier or the city. But once society is conscious of the nature of the images contained in these myths they can be useful tools in environmental understanding and management. Some of the most powerful new mythologies of the environment are contained in tourism environments. The tourist brochure appeals to the inherent desire for pilgrimage; in this case, pilgrimage to the environments lost in order to recapture them. In this context, authenticity, the natural, the mysterious are part of the powerful language and imagery of the myth.

Above all, the myth demands an engagement with nature, rather than solely material exploitation or even scientific explanation of it. In this way, it encourages the continuity between land and people; place and people. For even though some environmental myths reflect the idea of conquest rather than preservation of nature, nevertheless, they also reflect the need to establish a relationship. Where there is unbridled exploitation of nature, there is no dialogue; it is all take and no give. This situation has led to much of the environmental degradation that we see today. It is therefore essential to preserve environmental myths which reinforce the urge to find power *in* nature rather than *over* nature, and which convey nature's dimensions of the transcendent as well as immanent in order to provide checks on greedy human behaviour.

Myths deeply (often subconsciously) influence the individual's disposition towards and behaviour with regard to the environment. They highlight the multi-layered nature of the relationship between people and environment, reflecting the psychic and spiritual response to environment as well as the material. This is found in descriptions of nature in terms of the majestic loftiness of the mountains; the awful grandeur of the canyon; the absolute solitude

of the countryside; the terrible wrath of the hurricane; the exquisite splendour of a landscape; the mighty river; the powerful wave.

We lose and find, create and destroy environments not only physically but also culturally and psychologically. Landscapes are not solely commodities of the economy but contain meaning around which our environments are lost and found. At each new frontier, beyond which society will relate to the environment in new ways, namely, in eco-tourism and heritage tourism, peri-urban expansion, waste management, inner-city renewal, there must be a process of rigorous examination of the images that guide us at those frontiers. Only then can we try to ensure that the new myths constructed and environments created are those that we really want.

Jamaica conceptualized as 'land of wood and water', conjures in the minds of many the sense of an environment lost and the notion of an idyllic existence. More significant than the loss of an actual environment in terms of an eco-system, has been the loss of meaning, which we derive from the environment through the alteration in our images of and relationship with it.

In the modern, urban world, there is a tendency to lose all contact with nature. While conscious of the relationship with the environment which we have lost, we must continually be re-evaluating nature in terms of the new needs and expectations of society. Our values are not static. We have to constantly renew our ethical awareness in order to re-evaluate our criteria of worth. We must examine our cultural filters closely in order to meet the challenge of constant reinterpreting and re-articulating our values with regard to new environmental dilemmas.

Perhaps our greatest concern in considering the environmental crisis, should be the impoverishment of our culture. It is commonly assumed that poverty in a material sense is closely allied to

degradation of environment and indeed the relationship is a very real one. But in environmental terms, it is more the poverty of culture rather than the culture of poverty with which we should be most concerned.

To turn now to the greatest and most pervasive myth of our time: the myth of development based on economic growth within the framework of modernization and in which progress is regarded to be of itself a good. This image of advancement and improvement of humankind is predicated upon the use of the environment in three main ways: as a resource for human material needs; as a service for human recreation and enjoyment; as a repository of waste generated by the economic and life-style changes which are part of the development process. These human demands impact upon the environment and upon people themselves, not serially, but through a system of simultaneous linkages in a number of direct and indirect ways. The conflicts of interest, which result, are major elements of the environmental dilemma.

Plenitude and Poverty

THE DECADE OF THE 1980S was described by the *Economist* as a "cruel disappointment" to developing countries and "a lost decade of development". The first half of the 1990s has not reversed the trend. In relative terms. The rich countries have become richer, and with a few exceptions (newly industrialized countries), the poor ones poorer. All suffered environmental degradation.

The development strategies, which were pursued, led to environmental degradation because the projects were based on technologies and patterns of production and consumption, which brought about changes in life-style, rapid resource exploitation and production of waste. In addition, the development process encouraged shifts in population leading to increased urbanization. The poor moved into the most environmentally degraded areas since the cost of land there was lower than elsewhere. With increased concentrations of people in such areas, together with increased poverty levels, the environment became progressively more degraded. Economic systems, infrastructure and social fabric all came under increased pressure. Both affluence through over-consumption and poverty through over-use of natural resources for subsistence and survival are blamed for environmental deterioration. Both are closely linked to development.

Development and Environmental Impact

Development is generally viewed as a process that improves the material circumstances, especially the living standards of people. Most agree that the improvement of living conditions relates to non-material aspects of wellbeing as well as to physical requirements. Development goals, however, are usually seen to depend on an increase in the growth of economic sectors. So while the indices of development reflect non-material, non-physical

aspects of society such as levels of health, nutrition, mortality and education, the actual process whereby these are seen to be realized is through the mechanism of economic growth. The economic growth has been brought about through increased industrialization and, associated with this, expanding urbanization. In the agricultural sector, growth has depended upon greater mechanization and the application of chemicals for improving yields. Industrialization, with its attendant urbanization, as well as commercialization in the agricultural sector, have all resulted in greater and greater demands being made on the environment. Even non-industrial resources are converted solely into monetary value in the process of economic growth. Landscape, ecosystems, culture and heritage and every human being's time frequently become merely a commodity in the economy. In addition, environmentally damaging lifestyles and consumption patterns increase during the process of modernization.

Economic development is not the objective of free market systems alone. Though from the Marxist perspective, environmental problems are regarded as an unfortunate but necessary consequence of the development of capitalism, it is clear that such problems are not confined to capitalist systems. The goal of expanding the productive forces is in conflict with the original goals of eliminating exploitation and alienation, which is central to Marxist ideology. Nevertheless, the assumption that the environment could be totally harnessed by the state through its technological mastery, and the further assumption that this would occur without bringing about the alienating social forces as experienced under capitalism, led the former Soviet Union into some of the worst environmental tragedies of this century. The programmes aimed at self-sufficiency included schemes to bring vast areas of the former Soviet Central Asia (Virgin Lands) under production. This objective, pursued through a massive programme of river diversion for irrigation to support cotton monoculture, led to an irreversible process of decertification. The Aral Sea, once the

world's fourth largest inland waterway has shrunk massively, leaving a desert of sand and salt.

The establishment of large nuclear reactors led to other disasters, notably that of Chernobyl in the Ukraine. A large radioactive air mass moved across Western Europe, affecting all that lay in its path wherever it was washed down by rain. That nuclear accident in 1986 has had far-reaching and long-lasting effects; nor has the crisis ended as forecasts show that future catastrophe is certainly possible. If the reactor is left alone there is certain to be a disaster and, if it is dismantled, there is the possibility of a disaster. Meanwhile, it could only be dismantled at enormous cost. What to do about Chernobyl remains a major dilemma.

Newly Industrialized Countries (NICs)

The bitter irony for the newly industrialized countries has been that their development has progressed rapidly within a free market economy, but with few if any control on resource exploitation. During the period of growth there was little or no experience in, and provision for

Controlling pollution and environmental degradation. Indeed, their lack of tight controls on pollution was one of the main attractions to industrialization in those countries, notably Taiwan and South Korea. Likewise, there were few controls on the utilization of the labour force resulting in a serious disregard for workers' welfare and human rights of various kinds. The NICs have sacrificed much for their apparent success.

Poor controls on industry also led to installations being sited in inappropriate locations. In Bangkok, for example, 75 per cent of Thailand's factories, which deal with hazardous chemicals, are within the city limits. These developments were not accompanied by any effective planning or pollution control. Environmental

standards and industrial pollution control which have been in effect in industrialized countries since the 1970s were not imposed in Third World countries.

In Brazil, the city of Cubatao in the centre of a region of industrial development has been named the 'Valley of Death' due to the high levels of air pollution. In Cubatao levels of respiratory infection, rates of infant mortality and the number of babies deformed at birth, are all substantially above those of other regions. Water sources, vegetation and animal life have also been seriously affected. Toxic wastes have contaminated the river so that fish are no longer found in it. Vegetation has deteriorated from the effects of acid rain. As a result, soils have become unstable and landslips occur leading to serious loss of life from time to time. Tropical rain forests are being destroyed at a rate of fifteen million hectares per annum, and will probably be largely non-existent within the first few decades of the twenty-first century. The destruction of the rain forests results in the devastation of habitats and species of plants and animals, which are being lost at an ever-increasing rate. More than 40 per cent of the Brazilian forest lost in recent years was due to the clearing of land for cattle production, mainly for export to United States fast food outlets.

Urbanization without adequate infrastructure and pollution control also leads to excessive pollution and contamination due to vehicular traffic. In Mexico City, in March 1992, the pollution levels had reached such a critical height that the government immediately ordered more than two hundred factories to cut operations by 75 per cent, it shut schools and barred 40 per cent of cars from the streets. While industrial activity was later restored, longer-term pollution emergency measures were declared to restrict car use and cut factory activity by 30 per cent. Mexico City was literally choking to death: people complaining of sore throats, streaming eyes and burning sensations in their noses. Part of the problem with Mexico City is its particular locality. Because of

high altitude, the city has 23 per cent less oxygen than at sea level. Mountains surround the city on three sides and prevent pollution from dispersing. However, the main cause of ozone pollution is the motor car. The transport policy in the city has been geared to private motor vehicles and petrol consumption has increased by 18 per cent since 1988. The city is running out of space to expand and air to breathe.

The Caribbean

In the Caribbean, as in other parts of the 'developing world', environmental degradation has proceeded with few checks on the process. Environmental degradation has occurred in both rural and urban areas partly because of the lack of effective restrictions on development projects of a wide range. The problem has been compounded in some territories because of the urbanization, which has occurred without the provision of infrastructure to manage the changes in population distribution. Furthermore, throughout the region, life-styles and consumption patterns have attempted to keep up with the modernity imported from North America and which is seen to be integral to development.

In the case of Jamaica, among the most severe environmental problems are those related to water. Pollution of surface and groundwater threatens human health, agricultural productivity and tourism. Closely associated with this is watershed degradation largely brought about by deforestation. From as early as the 1930s, there has been evidence of watershed degradation and soil erosion in Jamaica. Yet it still continues and at an increasingly alarming rate.

Water Resource Problems

Contamination of groundwater in Jamaica is high. This is because the limestone rocks, which underlie 67 per cent of the island and

collect approximately 84 per cent of the total water produced each year, are extremely porous and, consequently, have a high infiltration and percolation rate. The problem is that the contamination had occurred for a long time before its impact was fully recognized and management measures introduced.

Monitoring of ground water quality as it relates to red mud contamination has been investigated in the four alumina plants along the south coast of Jamaica. The red mud, which is the waste product from the process of refining bauxite to alumina, is particularly threatening to ground water. This is on account of its physical properties: fine grain size which increases the tendency to absorb and retain water; high concentrations of sodium and hydroxide ions; the presence of iron oxide and organic substances which on decomposition give an unpleasant smell to the water; the high sodium content and acidity of the red mud which pollute the groundwater.

In the early years of bauxite/alumina refining only the visible degradation of land due to the removal of soil at the surface was considered. No precautions were taken or regulations established to prevent underground contamination. The red mud has been piped to recently mined limestone karstic areas to become ponds that are unsealed and located directly in the path of groundwater flow. This situation occurs with respect to both the Nain and Mount Rosser Mud Ponds.

The Mount Rosser Pond is the largest mud disposal pond in Jamaica and covers a surface area of 40 hectares. No special installations were required before storage began, since the possibility of danger to the environment was not taken into account. Despite subsequent attempts to deal with the problem, the underground watercourse to north of the pond shows evidence of significant caustic contamination. This includes sodium contamination of Rio Hoe Spring and the Moneague Lake, which

is fed by the Spring. A study by the Jamaica Underground Water Authority showed that in 1983, this spring which once supplied households, had become unfit for human consumption.

The Nain Mud Pond consists of two sites and, like that at Mount Rosser, is in an area of porous limestone. When the bauxite-alumina plant was opened in 1969, five wells were drilled and later a sixth, to supply domestic industrial water. After just one year sodium concentration were detected in the wells. At present five wells are contaminated and the sixth, at Pepper is showing signs of becoming increasingly so. The affected area covers approximately 20 square kilometres and the domestic wells that supply the town of Mandeville are threatened. In response to the contamination problem, the Bauxite Company subsequently adopted a new mud stacking disposal system which appears to have been successful.

Contamination of rivers by effluent from agro-industrial complexes, for example sugar and coffee, is also significant. This is the case for the Rio Cobre, Mona and Far Rivers, among others, in which there is indication of very high levels of organic load and reduced available oxygen for the support of aquatic life. Associated with these high levels of organic effluent, are cloudy, discoloured water and a pungent odour. This means that downstream the water cannot be used for drinking or domestic purposes.

In Barbados and Antigua and some tourist resort areas such as Ocho Rios and St Ann's Bay in Jamaica, the increase in the demand for water, not only for agriculture but also for growing urban areas and tourist resorts, has compounded the stress on water resources. The water table has been lowered significantly, so that severe shortages of water are now commonplace. In Antigua, much of the remaining groundwater has been affected by salt-water intrusion, and cannot be used. In Barbados, the total potential water resources are now so low that the island is placed within the

'stress category' and on a par with Jordan, Libya, Somalia and Djibouti. The demand for water in Barbados has been growing at about 4 per cent per year. By 1994 the groundwater resources were almost 90 per cent committed. Yet life-styles and tourism priorities have not changed.

Deforestation and Watershed Degradation

It is estimated by some agencies that Jamaica now has one of the highest deforestation rates in the world at 3.3 per cent per annum. Less than 6 per cent of Jamaica's natural forests remains undisturbed. Of a total of thirty-three watershed areas in Jamaica, thirteen have been seriously damaged and seven are moderately damaged.

Since large plantations for export crops dominate the flat alluvial plains of Jamaica, small farmers have always been forced to farm on steep hill slopes. Traditionally, land has been cleared and burned for small-farming activity as trees have also been cut for charcoal and other agricultural, construction and domestic purposes. These practices now constitute a serious threat to watersheds. Added to small farming is the relatively recent expansion of export crops, notably coffee, on steep, vulnerable slopes. The conflict of interest between agriculture and watershed environments is not restricted to small farmers or subsistence livelihoods of the poor. For example, as world coffee prices increased, so land was cleared in the Blue Mountain range and coffee planted as a mono-crop. Logging (illegal and legal) and poor techniques of road cutting, as well as the clearing and bulldozing of hillsides for residential and resort development all contribute to what is now recognized as the massive destruction of the watersheds.

Coffee farming between Silver Hill Gap and Hardware Gap in the Buff Bay watershed area is an example of watershed degradation

following the removal of vegetation and exposure of the soil. Coffee farming promotes little or no conservation of natural resources. It requires clearing of the land and mono cropping because, for at least the first two years, a coffee plant does not grow well with other crops, which only serve to decrease soil erosion and runoff. However, with little or no forest cover, increased soil erosion on steep slopes is the result. Likewise, a study of the Cane River Watershed demonstrated the occurrence of serious degradation. Uncontrolled burning, deforestation and poor farm management are the factors that are destroying and threatening this watershed. Over a period of some thirty years, about 45 per cent of the watershed has been deforested. In the period 1980-88 alone, 380 hectares or 11 per cent of the watershed's forest cover was destroyed. In the 1950s and 1960s, attempts were made to establish pine and eucalyptus plantations to protect the watersheds, but even these trees have been severely decreased in numbers as a result of charcoal burning and logging activities.

The Impact of Deforestation

Rainfall and forest cover are two of the most important factors in the hydrological cycle. Without rainfall, precipitation into rivers would not take place, and without trees the process of absorption necessary to recharge groundwater would not occur. Forested areas usually experience high rainfall as a result of the trees, which are essential in the evaporation/precipitation relationship. In Jamaica, much of our forests lie in the north and north east, especially in the Blue Mountain Range. The Blue Mountains contribute 14 per cent of the annual reliable yield of surface drainage and groundwater recharge.

When rainfall occurs, the amount absorbed by tree trunks or leaves usually returns to the atmosphere by way of evapo-transpiration, aiding the re-precipitation process. In areas where the forest cover

has been reduced, so has the rate of rainfall. The 'sponging' ability of forests is essential in maintaining the balance between absorbing water during the rainy season and releasing water during the dry season. Forests also protect the ground from the intensity of heavy rainfall. By acting as a cover, the impact of rainfall is reduced; thus less harm is done to the soil. In forests where the cover is removed, raindrops break up the soil and, with no cover to absorb the water run-off, soil erosion due to little or no infiltration is the result. Further, depending on the steepness of slope, the water may either recharge groundwater or takes one of several routes towards a stream channel. Heavy discharges of water enter the waterways and the sea laden with sediment.

Increased sediment has a harmful effect on coastal environments. In the case of mangroves, an increase in sediment limits aerobic processes and reduces the oxygen supply. Fish and other marine organisms that feed, live and breed there are also affected. Furthermore, in the marine environment the water must be free from sediment pollution to allow the sun's rays to penetrate and be absorbed by organisms for photosynthesis. Without photosynthesis, mangroves, coral reefs and other aquatic growth undergo considerable metabolic stress. Coral reefs are subjected to further stress when sedimentation restricts their upward growth. There is evidence of widespread bleaching of coral reefs in Jamaica and the Caribbean partly as a consequence. The depletion of mangroves and the destruction of coral reefs increase the vulnerability of the coastal zone to flooding and storm surge.

Forests also affect biodiversity by providing the habitat for a wide range of plant and animal species. Uncontrolled exploitation of Jamaica's forests and coastal areas has resulted in the extinction of at least eight species of vertebrates in the last 150 years. Persistent exploitation of forests is already threatening the habitat and existence of other species.

In Jamaica, the process of urbanization itself is responsible for the loss of habitat and species. In other words, it is not simply direct or wanton destruction and over-exploitation, which result in loss of species. Take, for example, the endangered species of the Hellshire Hills. As urbanization expands into the Portmore region, species will be ultimately lost, quite apart from the loss of the wetland habitat, which is now filled in. Loss of species worldwide is proceeding at an alarming rate and, in Jamaica, both hillside areas and coastal zones are being seriously encroached upon for the continued expansion of the Kingston Metropolitan Area (KMA). No one can deny that there is a desperate need for new housing, especially for low-income groups, but this presents a major and as yet unresolved environmental dilemma.

Urbanization

More than 50 per cent the total population of Jamaica is now classified as urban. The KMA alone accounts for more than 25 per cent and the fastest growing area in the island is Portmore. Portmore recorded an average annual rate of growth of 2.30 per cent of population per annum from 1982 to 1991, and this trend has continued. Montego Bay had the second highest annual growth rate, at an average of 1.92 per cent of population over the same intercensal period.

The relationship between urbanization and environmental degradation is chiefly exemplified by the following:

- Housing, including the quality of housing as well as other infrastructure, especially water and sanitation, and the space and types of sites available for the expansion of housing;
- * Transport and traffic;
- * The disposal of waste.

Sub-standard housing with inadequate water supplies and sanitation is a problem in Kingston, Montego Bay and Spanish Town. This problem has now extended to the coastal area of St Ann, where the tourist industry has attracted squatting in the vicinity of Ocho Rios.

As the Kingston Metropolitan Area and Montego Bay expand, the demand for space infringes on environmentally fragile areas. These include land that has largely been reclaimed and which would be threatened in the event of flooding. The development of the Portmore area not only places the natural ecosystems at risk, but also places a large proportion of the urban population, along with their houses, property and possessions at considerable risk. Meanwhile, as degradation in the upper reaches of the watersheds beyond Kingston proceeds due to agricultural activity and deforestation, so erosion and run-off increase, and the pollution levels in the harbour and risk of flooding in the coastal area rise commensurately.

Transport becomes an increasing problem as the urban areas sprawl into locations farther and farther away from the centres of employment and schooling. Without really adequate transport systems the need and eventually the entrenched pattern of private vehicular transport for all routine journeys, moves the entire city towards a situation of near traffic paralysis. Most Third World capital cities have fallen into this trap and Jamaica appears to be moving rapidly in the same direction. The number of vehicles in Jamaica in 1982-83 was just over 65,500; by 1993-94 that number had increased to over 125,000, according to the Traffic Authority. Quite apart from the impact that this situation has on people's mood, work productivity, school performance and general levels of stress, the consequences for the environment are enormous. The carbon emissions alone are major contributing factors to climate

change and ozone depletion. Urban traffic concentrations in general add considerably to atmospheric pollution.

In addition to water and air pollution, there is now a major island-wide problem of solid waste, at present concentrated in the urban centres. This includes industrial, commercial, hospital and domestic refuse and spans the range from large metallic objects to medical materials, batteries, household garbage and sewage. Taking the treatment of domestic sewage and industrial effluent as an example, it is evident that disposal is grossly inadequate. Only 36 per cent of households within the Kingston Metropolitan Area are connected to municipal sewage systems, and none of the sewage is fully treated before entering the harbour. Nor is this situation unique to Jamaica; in the Dominican Republic, sewage collection and treatment is available to only about 15 per cent of the total population.

Garbage in the gullies and on open land is now widely recognized to be a problem but many of the dumpsites are also inadequate, damaging to ecosystems and unhealthy to those who live near and scavenge from them. The spontaneous igniting of garbage due to the build-up of gases also presents a serious danger. With the massive increase in the volume of waste, which is produced, especially in urban areas, coastal wetlands have often been selected as sites for dumps or landfills. In Mexico, about 65 per cent of all mangrove swamps along the Caribbean shore of Tabasco State have been eliminated by petroleum-related activities, threatening the continued existence of shrimp fishing in that area. In Trinidad, the principal landfill of Port of Spain is sited within the 15,000 acre Caroni swamp, while in Jamaica, the Riverton City Dump is located in former marine wetland which was once fringed by mangrove forests.

Paradoxically, the particular locality factors in Jamaica, which enhanced opportunities for industrialization and urban growth,

have become degraded by the processes associated with development itself. In particular, the harbour of Kingston, renowned as one of the largest natural harbours in the world was the *raison d'être* for the development of Kingston. It is so well protected that the dispersal of pollution in the waters is restricted, hence increasing the concentration of toxicity in the harbour itself. Likewise, the mangrove forests and wetlands of the coastal zone are themselves being destroyed by the very urban settlements, which they should protect.

Environment and Health

One of the most severe threats to health in the urban concentrations is associated with inadequate management of waste, the bi-product of development and modernization. Air pollution, water pollution and solid waste present a range of threats to health; lung diseases, brain injury and cancers are among the illnesses relating to environmental contamination. Industrial waste, agricultural waste associated with chemicals in pesticides and fertilizers, petroleum pollution from vehicular traffic, and domestic waste left exposed and attracting vermin, as well as hospital waste which is potentially toxic or infectious, and, finally, radioactive nuclear waste all combine to present a horrifying picture of the relationships between development, environmental deterioration and health.

To the catalogue of on going and mounting health hazards can be added the increased risks caused by human error in the application of technology and the use of toxic and radioactive substances. Connections are alleged to exist between asbestos and cancer, lead and brain injury; as well as aluminium and the deterioration of brain tissue.

Industrial accidents become more catastrophic, as exemplified by the disaster at the chemical factory at Bhopal in India; and the

nuclear reactor accidents of Three Mile Island in the USA and Chernobyl in the Ukraine. Much less dramatic but nearer to home, there is the danger to health posed by the leakage of the bauxite-aluminium plant electricity generator in the vicinity of Hayes in Clarendon. The implications of technological developments for health exceed our current capacity to monitor, detect or, in the last analysis, to control them.

The risk of ill health due to poor housing, water and sanitation in such areas is compounded by the poor nutritional status of the same groups of people living in those same poor environmental conditions. While the rural poor have opportunities to provide for the subsistence of the household, the urban poor are faced with the need to buy all foodstuffs at ever-rising costs. In Jamaica, despite economic growth, the daily calorie intake as a percentage of recommended daily allowance has fallen over the past decade and the average national statistics conceal the vast discrepancies which occur between the affluent and the poor. Likewise, national figures, while indicating a decline in severe cases of chronic malnutrition occurring in the lowest income groups, mask the social differences. The Statistical Institute of Jamaica reported in 1993 that the rate of admission of children suffering from malnutrition, to the Bustamante Children's Hospital, increased from 3.8 per cent of hospital admissions in 1990 to 7.2 per cent in 1991.

With development has come concepts of modernization, which emphasize health care based on advanced technology, which is expensive and the devaluation of traditional health care methods and medicinal remedies derived from the local environment, which are cheaper. Consequently, modern health programmes cannot always be sustained by the national economy once the specific project funding ceases. The expected positive link between economic growth and expenditure on health-related activities is not necessarily sustainable.

A New Approach: Sustainable Development

In 1984 the United Nations commissioned an independent group of persons from developed and developing countries to identify long-term environmental strategies for the international community. In 1987, the World Commission on Environment and Development (WCED), also known as the Brundtland Commission produced a report for the UN entitled *Our Common Future*. Although the WCED was not the first group to use the term 'Sustainable Development', they offered a straightforward and widely used definition: 'development which meets the needs of the present without compromising the ability of future generations to meet their own needs.' However, the apparent simplicity of this definition was offset by the challenges that the commission identified for bringing about sustainable development in practice.

The challenge of implementing sustainable development is an ongoing one towards which many governments, organizations and individuals have been working throughout the 1980s and into the 1990s. Adams noted that 'the concept of sustainable development cannot be understood in a historical vacuum.' In order to identify the challenges of implementing sustainable development in practice and to realize the opportunities for sustainable development, it is necessary to understand the changes in thinking and practice from which the concept developed. Of particular importance are the changes in thinking about that which constitutes development and how best to achieve it, together with changing ideas about the environment.

The Nature of the Dilemma

The crux of the dilemma of development and environment is that there is no possibility of following the prescriptions of 'limits to growth' while retaining the present economic system. This

economic system generates the problems we face. The point is most easily exemplified by looking at the problem of waste. Developed economies are tremendously wasteful. They produce mountains of commodities that are totally unnecessary and provide elaborate wrappings and trimmings as well as built-in obsolescence. Another fault is that the industrialized capitalist economy fails to reverse the problems in need of reversal, that is, it does not make the poor any richer, and it does not protect the environment. The more liberalized the economic policies, the worse the situation becomes.

Yet if we ceased producing in our present economy there would be chaos. Unemployment rates would soar and firms would go bankrupt if people started to identify items they did not need and ceased to produce and consume them. Poverty levels would increase rather than decrease if production were to be reduced. It is crucial for the health of the economy that we keep producing all the unnecessary, luxurious and wasteful things we now consume. We have to maintain the tourist trade, the bauxite industry and agricultural export crops for similar reasons. The economy is healthy only if production and consumption constantly rise and, by extension, the volume of exports constantly expands. The economy has to grow in order to increase investments. Yet, in the long term, sheer survival makes it necessary for us to move to far lower levels of production, consumption, resource use and disposal of waste; but it is clearly impossible to move in that direction given our present economic objectives.

The 'limits to growth' argument concludes that we must work towards an economy that is not only a non-growth economy but also one which operates on a far lower per capita level of production and a far lower gross national production (GNP) than now exists in currently industrialized or rich countries.

Conventional wisdom claims that freedom of enterprise and the profit motive produce efficiency. They do so because economic theory *defines* efficiency in precisely those terms, that is, increasing capital to invest, and maximizing the rate of return of invested capital. But if efficiency were defined in terms of applying existing productive capacity to meeting existing human needs, then it becomes obvious how inefficient our current economic system is. Furthermore, the economic system locks us into a highly integrated global economy in which small-scale production of goods is not usually regarded as efficient as the mass production of large corporations.

Since the early 1960s, there has been a rapid growth of social movements concerned with the nature of the alternatives perceived as the sustainable or conserver society. The argument is that there are viable alternative technologies, economic structures and life-styles to which developed countries and Third World countries could move. People are just beginning to realize that what seemed to be many separate problems such as environmental degradation, resource depletion, threat to civil order and personal safety, high levels of crime, poverty are not only linked but are, in fact, largely caused by the same basic problem. This central problem is the expansion and entrenchment of the 'growth and greed society'. One cannot, therefore, propose fundamental change in the problems we face regarding the environment without the need for fundamental change in some of the basic values, life-styles, systems and goals that have driven Western societies for centuries. This is especially the case with regard to those material living standards associated with ideas of modernization and development.

Let us consider the ethical guidelines and the belief systems from which society derives its values and which help direct the decisions that we individually and collectively make.

Dominion and Domination

SOCIETIES GENERALLY SEEK TO ACT in accordance with what they regard as being ethical, even ideal, behaviour. This forms the basis of laws, which are enacted in order to enforce such behaviour. As a consequence, attitudes and actions are guided by rules that reflect the values accepted by the society. In turn, the values are based on beliefs which condition notions of morality and, ultimately, the concept of what is intrinsically good versus what is bad; right versus wrong conduct in a given situation. Ethics is the philosophical approach, which is concerned with issues of morality and the nature of thinking by which people evaluate their actions. It examines the concept of rightness and wrongness of actions and motives, including the question of whether the ends justify the means. In other words, is it just the ends or final goals that have to conform to the notions of right, allowing the means, if necessary, to be wrong?

Environmental Ethics

There is a widely held view in most societies which arises from a sense that it is in the interests of all, if not the actual duty of humans, to promote or preserve the environment, whether for its beauty and source of emotional input or for its use as a material resource and repository of waste. But even though preservation of the environment is regarded as good, the concept does not meet with universal agreement in terms of meaning, motives and the nature of the ultimate good as the goal. Yet a clear sense of purpose is essential if there is to be any moral conviction about, or commitment to, one type of behaviour over another.

There are at least two possible meanings behind the preservation of environment as a basis of environmental ethics:

- * Ethics for the use of the environment,
- * Ethics of the environment.

Technocentric View of Environment

The 'management ethic' of the West is based on the first meaning, that is a view of environment as being entirely external to people and for their use; such use includes the aesthetic contribution of the environment for the pleasure of humankind.

From the technocentric view the ethical principles which check action or guide behaviour are based on market value and legal ownership. These provide guidelines as to what is right and science becomes of itself 'true' and technology 'good'. In such an approach, the environment is managed by whatever technology can be made available. The market-value factor itself provides the check on overexploitation because it becomes evident that excessive use of a resource will undermine the market value in a very short time. This is an underlying principle of sustainable development.

There are questions of what the nature of the duty of the present generation towards the future generations should be. Some of the questions that arise are whether resources should be used in such a way that they are simply conserved for the future, or whether we should refrain now from using non-renewable resources, such as fossil fuels, so that the next generation will know how to live without them.

Ecocentric View: The Intrinsic Value of

The second ethical viewpoint refers to the idea of intrinsic value, based on the inherent worth of the natural environment and its various elements. The implication is that the natural environment should be accorded respect and consideration quite apart from its value as a means to human ends. Such an attitude would not have seemed strange in the Middle Ages but was largely subsumed by

people-centred perspectives which became embedded in Western thought after the Renaissance, and which were further reinforced during the Enlightenment. Indeed, such a perspective would not be strange to many cultures in the East even today.

In their extreme forms, views of the environment for use by people, and environment for its own sake are placed in opposition to one another. Between the two extremes there is a viewpoint which combines elements of technocentrism and ecocentrism.

Technocentric and Ecocentric Approaches Combined

This reflects a view whereby the intrinsic value of the non-human world is acknowledged and people have a responsibility towards the environment, but primarily in terms of its ultimate value to humans.

Despite good intentions on behalf of the environment, the moral code from this perspective (certainly in the Western tradition) tends to favour those animals, which are closest to humans in the evolutionary scale, namely mammals. We have less regard for, or even try to annihilate, those, which are lower down the scale and regarded as harmful to humans, for example, mosquitoes and other insects. Different people draw the line at different points in the hierarchy, the specifics of which are largely cultural. For example, cows are revered in Hindu culture; dogs and pigs are regarded as unclean animals by Moslems; while a strict Buddhist would not harm an insect.

Current views on the value of biodiversity have become a means of protecting ecosystems, and in this context both plants and animals are regarded as essentially valuable, including insects and microbes. The importance of the inter-connectedness of everything on the planet is now realized, and even if there are no universally

accepted moral guidelines most people agree that it is prudent to be cautious.

The dilemma from this 'middle ground' then becomes an issue of whether the end justifies the means. There are people who feel satisfied if animals are killed for food (seen as a necessity for human survival) and provided that they are not killed for pleasure or luxury. Others would say that they should not be killed at all, not even for food, and that humans should be strictly vegetarian. Nevertheless, many such persons would have no compunction in killing insects. According to the Utilitarian philosophy of the Benthamites (followers of Jeremy Bentham 1748-1832), such actions would tend to be justified on the basis that the animals in question do not suffer. On those grounds, no moral issue arises over the use of plant life in the service of people, such as for food, aesthetic value or for functional use in assisting climate and soil protection. In all these views, there is a clear idea of hierarchy with humans at the top, and with only humans bearing the responsibility of having a duty based on moral codes translated into laws for the protection of animals against cruelty. Such codes vary from one culture and country to another.

Perhaps the most critical dilemma of the present time concerning the means justifying the end in terms of use of nature, is the extent to which one should interfere with the genetic reservoir of the planet. At what point does animal experimentation in the 'service of humanity' or genetic engineering cross the threshold from intrinsically good to bad? Do the ends justify the means? Can technology be controlled once its capacity has been developed? While biotechnology may be regarded as morally permissible, can the same be said of genetic engineering, which may be applied not only to animals but also to human beings?

Secular perspectives suggest that science and technology will allow humankind to relate to the environment as both innovators

and managers. Harnessing biotechnology and other forms of technology provides the power to rule. As long as people are 'responsible' in the way their technology is used, then humankind can consciously control the evolutionary processes of both people and environment, making management decisions on the basis of information technology. Livestock will be able to get fatter faster, crops will yield more; but the power to control human genetics will also be within our scope, and the point at which we should stop will be a central issue of the environmental dilemma of future generations.

View of a People-Environment Connection

Deeply embedded in the Western and modern way of thinking is a clear distinction between subject and object or a 'dualism' of people and nature.

The late twentieth century has seen worldwide a growing tide of serious questioning of the people-nature dualism, accompanied by a search for greater realization of self in the environment.

This view of the human relationship with environment combines notions of environment for its use with that of environment for its inherent worth, to attribute value to the environment in terms of its being a reflection of ourselves. From this perspective, nature is intrinsically valuable to the same extent that the self is valuable. The logical conclusion of this argument is that the human self is in a web of life and non-life, rather as a particle seems to be a temporary manifestation of energy.

The critics of this view argue that this fundamental human identification with nature is simply a metaphor not of itself a reality. Further, it can be seen as part of the early nineteenth-century tradition of Romanticism in which Nature is personified and metaphors constantly constructed, as in the myths, which have

been associated with male dominance over female and certain traits of nationalism.

Ecology-Based Ethics: Gaia Hypothesis

Emerging from ecological science, another approach to the people-environment connection has been advanced through the convergence of the Gaia hypothesis and the ideas of self-realization, which began to emerge in the West in the mid-1960s. This convergence relates to the concept of 'holism' in popular thought, (in other words, the interrelatedness of everything - body, mind and spirit - as well as all living creation and all that is in the universe). The Gaia hypothesis is based on the concept of the existence of planetary feedback mechanisms, which tend to optimize the conditions for life. This concept precludes many current human life-styles and consumption patterns.

In explaining the positions of human beings in the Gaian system, views have been advanced which suggest that there is a central core of interactions to which everything is connected. The flow of information between some sections of this core and humans may be in the form of intuitive knowledge rather than scientifically derived knowledge. In this way, humans could keep 'in tune' with the total system. Humans may proliferate and consume resources to the point where they drain the system unless they alter their consumption patterns by developing a new awareness of 'self' as body and mind, and an essential part of the whole. Other views advanced see the human position in the whole as actually determined by Gaian imperatives, so that human behaviour changes in response to the forms or impulses of the overall planetary system.

This movement has been especially strong in North America and Western Europe, where technocentrism had reached extreme secular forms. The danger is that the relationship between humans

and environment, taken to excess, could lead to being over-indulgent of nature and an abandonment of the debate on pragmatic environmental issues. Certainly, the concept of the non-duality of humans and environment accords with much religious and philosophical thinking in countries of Asia and has influenced Western thought through the transcendentalist movement. This is contrary to the dominant Western view of people and environment.

Western Conceptualizations of Environment

Western conceptualizations of environment seem to have been deeply influenced by two fundamental ideas:

- * That time is linear and non-repeatable;
- * That people and their environment are dual entities.

Linearity

The concept of the linearity of time was preceded in many societies by the concept that time was repeatedly renewed. There was an annual cosmology in which all things were made new. The critical shift in the concept of time emerged in the early centuries of the Christian era. The concept of time as linear and non-renewable, was associated with views of uni-directional change and, in the nineteenth century, made possible the popular understanding of the Darwinian theory of evolution in the West. The modern idea of progress, together with the intrinsic value accorded to this notion of progress, is also based on the fundamental idea of linearity. Civilization and modernization are terms, which carry the perceptions of humanity always moving towards a higher goal.

Secular philosophies of holism have adopted this concept in which there is a progressive unfolding of all nature, transforming itself

towards some final end which represents the convergence of the consciousness of everything. The notion of progress has even been extended beyond the Earth to encompass the entire planetary system and beyond. Indeed, public media entertainment in the form of *Star Trek* reinforces and extends the future environments of human familiarity and jurisdiction into 'outer space'. It is based on the concept of science and technology moving in a progressive, linear fashion to conquer new heights, thus claiming new environments. This has become commonplace in the world now, not just of select groups of scientists but also of an entire generation of young people who share a Western world-view.

Dualism

The concept of dualism in the context of people and nature (or environment) emerged in classical times and has persisted in present thought. The implication is that the human species is inherently different from the rest of the Earth, having been fashioned in the image of God, and from that superior position inherits by *right* of personhood certain powers over everything else in or on the Earth. Some would prefer to interpret this position as the *privilege* of personhood rather than the *right*.

Dualism was firmly established in Western philosophy by Rene Descartes during the Enlightenment; it was carried forward through the work of August Comte (1798-1857) and is still at the heart of today's scientific methodology. It is clearly and poignantly articulated in the term 'man's conquest of nature'. Moreover, the terminology does not refer to man's conquest incidentally or coincidentally, but it reflects the reality of nineteenth-century Western thought of the transcendence and power of man versus the immanence and submission of woman. Indeed, the dualism of Man and Nature was mirrored in the feminization of Earth and Nature. Language reflected the conceptualization in terms such as 'Mother Earth' and 'Mother Nature'. The subduer of nature, or the nation

state, becomes the 'Fatherland'. Thus the idea of man made in the image of God is fully acceptable since God, at this stage, is male. A duality is constructed between man and woman as also between man and nature.

Since the second half of the twentieth century, largely conditioned by the spread of capitalist forms of development and modes of production, the Western world-view regarding linearity and dualism has become the paramount conceptualization. Thus Western capitalism and notions of development currently provide an official, if sometimes superficial, construction of environment worldwide. It is difficult to tell whether the Western ideas and constructions will expand globally and even totally take over the concepts of environment along with those of development; or whether the Western view will contract under present challenges to the tenets of these perceptions, with the possible re-emergence of other cultural values; or whether an amalgamation of different sets of beliefs and value systems will be the outcome. Meanwhile, the Western, capitalist world view tends to overlay the religious values of the East and virtually replaces those of the West to the extent that, we in the West, now regard Western capitalist views and religious values to be one and the same thing.

Theology and Environmental Ethics

Early Religious Conceptualizations of Environment

Environmental constructions create and condition world-views, but not all ideas or constructions of environment were written down; many were transmitted orally. Before the dominance of Western ideas, most societies throughout the world had artistic constructions of the relevance of Nature in their life-world.

Among many pre-modernized societies, people and nature occupied a sacred space and sanction was sought from a god or

gods. This was often accompanied by ritual and even sacrifice, before interfering with nature or expecting any favours from it. This conceptualization persists in a number of places but now it is largely mingled with scientific explanation or with orthodox religious belief. The cotton tree as the believed domain of spirits in Jamaica is feared by many people. In contrast, the Odee tree in Ghana and the Waringin tree in Java are regarded as sacred and the dwelling place of ancestors, except to those for whom Christianity or Islam have provided a new variation of the sacred, based on belief in one God. Though the relationship with these trees and attitudes towards them have been fundamentally altered among some people by modern thinking, for many, belief in their sacredness conflicts, or is blended, with a practical approach to the use of the tree. This kind of approach to nature is not uncommon wherever religious syncretism has occurred, as for example, Voodoo in Haiti, Santeria in Cuba, Pocomania and Redemption Zion in Jamaica. Derek Walcott's *Omeros* demonstrates the ambivalence which exists through the view of Achille, one of his characters, who is faced with the dilemma of recognizing the trees as sacred yet essential as a resource:

... Around him, other ships

Were shaping from the saw. With his cutlass he made a swift sign of the cross, his thumb touching his lips while the height rang with axes. He swayed back the blade,

And hacked the limbs from the dead god, knot after knot, wrenching the severed veins from the trunk as he prayed: "Tree! You can be a canoe! Or else you cannot!"

Derek Walcott, 1990.

Eastern Religious Conceptualizations of Environment

In the pre-industrial culture of Japan, a non-dualistic framework prevailed which encouraged an immensely high level of value of nature and surroundings. The Japanese word *judo* refers to a situation in which nature and society are inseparable. There is no equivalent word in Western languages. Whether such a word has disappeared under the impact of industrialization, capitalism and modernization, or whether it has been simply overlain by modern concepts, later to re-emerge in its original or altered form, is impossible to know. One could reasonably hypothesize that it could not be recaptured without having been changed.

Similar conceptualizations of people and nature prevailed in China, though little seems to be known of any specifically environmental interpretation of Chinese civilization. In India, the environmental implications in Hindu belief and culture, especially as represented in the Vedic literature, reflect the sense of continuity of people and nature. However, belief in the continuity of the personal spirit in various embodiments or reincarnations, including animals as well as humans, recognizes a hierarchical gradation between animal species and between animals and humans. Even among humans, a clear hierarchy of personhood is embedded in the culture.

The image of Nature as an interconnected web is common to both Hinduism and Buddhism. For Buddhists, the environment is not different from most other phenomena. It can be an object of human attachment and therefore of suffering. The law of *Dharma* ensures that attachment to worldly things will result in the soul not escaping from the cycle of continual rebirth. There is therefore an implicit ethic of restraint and minimizing the human impact on nature.

The spread of Buddhism took with it some of the essential elements of early Chinese Taoism (known in Japan as Zen). The

Tao stressed a quiet attitude to life and the life-world, focusing on the achievement of harmony with the cosmos by finding its ways and rhythms and adjusting to them, rather than trying to alter them.

The influence of Zen in Japan has been in stressing the unity of all things, and in the primacy of knowledge through experience rather than objective rationality. Essentially atheistic, Buddhism combined with native Japanese animist religion (Shinto) to produce, as Simmons put it, “. . . one of the most nature-conscious and delicate aesthetics present in known human culture”. Based on a non-dualist philosophy, the concept of the existence of and relationships between subject and object is that of continuity of existence and being. This continuity is viewed with reference to the individual and nature, people and environment. Emotion, rather than science or theology, is the basis for awareness of other species, light, weather and, by extension, the environment as a whole. There is no vestige of a hierarchy of existence.

Islam is monotheistic and is based on a holy book, the Qur'an, which is explicit in its instructions to people to act as stewards of the gifts of Allah. All such actions are to be carried out on the basis that the Earth is a temporary home, and that all such activities of Moslems will be part of the preparation for ensuring a place in Heaven. The requirement of the ritualistic slaughtering of animals (Halaal) and the rule that only meat prepared in this manner should be eaten reflects the belief in the sanctity of Nature, which the Moslem religion recognizes in daily life.

Judeo-Christian Tradition and Environment

In contrast to the eastern religions, the Judeo-Christian tradition has not been credited with an emphasis on paying respect to the environment. Quite the reverse. Since the rise of environmentalism in the 1960s, Christianity has been blamed by critics for the problems faced in terms of conservation and environmental

degradation caused primarily through this concept of duality between people and nature. The American scholar, White, for example, refers to Christianity as providing the historical root of our ecological crisis. An article in Time magazine in 1989, blamed Christianity for ecological problems based on the association between Western science and technology and the religious and social context of the Middle Ages. The article made reference to the notion that science, as we know it, could not have evolved without the particular proponents of the Christian doctrine of creation and the interpretations of this doctrine in the Middle Ages.

The Middle Ages in Europe are seen as a technological and intellectual turning point in our relationship with the environment. Christianity, which was seen as providing liberation from the beliefs of paganism associated with the environment, later evolved into a doctrine stressing the duality of Humans and Nature, with humans as demigods (created in God's image). Thus in many pagan religions the Earth was seen as a mother or fertile giver of life; nature (the soil, forest, seas) was endowed with divinity, with mortals being subordinate to it and fearful of it. While in the Judeo-Christian tradition, people were seen to be given dominion over nature.

The interpretation of the Judeo-Christian tradition as introducing a dualism of people and environment, which is responsible for environmental degradation, is based on the biblical description in *Genesis*. The Earth, portrayed as the creation of a monotheistic God, who, after shaping it, ordered its inhabitants to: "Be fruitful and multiply, and replenish the earth and subdue it: and have dominion over the fish of the sea and over the fowls of the air and over every living thing that moveth upon the earth. " The idea of dominion has been regarded by the critics as an invitation to use nature in any way people may wish. It is argued that the spread of Christianity, which is generally considered to have paved the way for the development of technology, may at the same time have

carried the seeds of the wanton exploitation of nature that often accompanied technical progress.

Christianity and Environmental Degradation

The most reactionary responses to the criticisms leveled against the Judeo-Christian tradition in general, and Christianity in particular, have been to accept the argument of the role of Christianity in encouraging environmental degradation and to suppress any counter-arguments. Some conservative views have regarded environmentalism as at worst, a modern American heresy, and as such basically irrelevant to the important aspects of faith. In any case, environmentalism is seen as an issue far removed of the essential spiritual or people-centred matters, which are the prime concerns of the Church.

From the fundamentalists' perspective, the view has tended to be that one ought to expect the demise of the Earth on biblical grounds. The environmental crisis would merely be additional evidence that God's kingdom is yet to come (and soon). Confirmation of the devastating natural disasters, which are to be expected to precede the coming of God's kingdom, is derived from some of the imagery contained in the Revelation of St John. This presents a picture of the anticipated forces of nature hurled in judgement against the world. In each case the destruction partial and not total, for this does not signify the end, only the prelude to the end.

The imagery, which is used in Revelation, appears to have its origin in the descriptions in *Exodus* of the plagues, hail and fire which fell on Egypt, when Pharaoh refused to allow the Jews to leave. In addition to the references of the terrors, which fell upon Egypt, it would appear that St John also referred to his own experiences of climatic occurrences. The rain, which looked like a rain of blood, had more than once been reported from the

Mediterranean countries. The reason for it was that fine red sand from the Sahara Desert was caught in the upper air currents, and when the rain came it appeared to have been raining blood.

Whatever the explanations are of the imagery used, it significant that people were repeatedly warned that they could not control the forces of nature in terms of climate and tectonic processes (volcanoes and earthquakes).

Regarding nature, there is strong indication that mankind has an important responsibility and role to play, as seen in the exhortation in *Genesis*, to "replenish the earth and subdue it". Clearly, such management of the Earth has to be within the context of the power of the forces of nature, which are beyond the control of humankind.

The Hebrew term 'to subdue' (Radah) does have oppressive overtones, but there is no reason to translate it as 'to dominate'. It could have been meant to portray the concept of victory over superstitions relating to environment in pagan beliefs or, as the biblical scholar James Barr suggested, as a warrant for agriculture through the domestication of plants and animals. Furthermore, humankind was placed in the Garden of Eden not to exploit and degrade but to "dress it and keep it" (*Genesis 2: 15*).

The Concept of Dominion

Despite the criticisms leveled against the Judeo-Christian tradition, there is no evidence in the books of the bible to suggest that dominion means domination. On the contrary, there is every indication that dominion is used to refer to an elevated position or higher status in a hierarchy or in relation to others. Regarding the verse of *Genesis* which is under discussion, the exalted status of humankind, is in relation to "the fish of the sea... the fowl of the air... and every living thing that moveth upon the earth" (*Genesis*

1: 28). However, dominion is also used to refer to power or a position from which control can be exerted, in the sense that freedom from domination is experienced. For example, the Psalmist refers to "dominion over the works of Thy hands" (Psalm 8:6) or "let them not have dominion over me" (Psalm 19:13). What these examples suggest is that the ways in which humankind exercises its rights and responsibilities of management over the plants and animals on the Earth, need to be guided by our awareness of right and wrong.

There are numerous guidelines given, in particular relating to stewardship. Human beings are instructed to act as stewards of all God's gifts as portrayed by the parable of the talents and, likewise, in the parable of the steward. The importance of stewardship in the context of the environment is, as the scholar C. S. Lewis wrote, "pragmatic as well as spiritual".

There is also rich imagery used in both Old and New Testaments indicating the positive place accorded to nature, as well as the importance of nature to humankind. This is portrayed both in a functional sense, using nature for sustenance and, also, in a spiritual sense, endorsing the idea of a close connection between the person's spirit and nature. In *Jeremiah*, we find a warm sympathy with nature, akin to that of many of the Romantic poets. Jeremiah knew "the great and terrible wilderness"; "the sorrow of the sea" and he recognized in the first bloom of spring the glory of God. The Psalmist wrote, "I will lift up mine eyes unto the hills from whence cometh my help" and referred to God as leading him into "green pastures" and by "the quiet waters" and there restoring his soul.

In contrast to the modern concept of wilderness as a challenging environment to be tamed, the early Christians regarded the wilderness as an environment in which to seek sanctuary from the distractions of the world and to communicate with God. The

classic case is that of the forty-day, forty-night sojourn of Jesus in the wilderness, which was a tradition later followed by the Desert Saints in Egypt and Sinai. Lacking deserts in Europe, remote mountain environments were chosen in the Middle Ages to become close to nature and through this, achieve closeness to God. This was reflected in the establishment of the monastic communities of Cappadocia (Central Turkey), as well as those of the Meteora. And Mount Athos (Greece).

There was more to the spiritual experience than the celebration of nature derived from the close connection with the environment. It also provided the physical setting in which the spirit communicated with God and was lifted or recharged through standing in awe of nature.

Those, like White, who have criticized the tenets of Christianity as providing attitudes negative to environment, have misunderstood *dominion* as meaning *domination* over the Earth. The argument that dualism with regard to humankind and nature belongs to the Judeo-Christian doctrine is not correct. What is clear is that not only have those who criticize Christianity for playing a negative role in environmental matters done a disservice to the interpretations, but so too have many people, including preachers and writers from the Judeo-Christian tradition itself. There has been a general failure to emphasize the interrelatedness of people and nature; instead there has been an endorsement of the concept of the separation of the two, which emerged in the Middle Ages.

Christian Theology and Environment

The occasional excursions into a metaphysical equality of all phenomena, even as early as reflected in the approach of St Francis of Assisi some eight centuries ago, never took root in Western thought. They were largely dismissed as heretical in thirteenth century Italy or, later on, as plain eccentric.

Neo-Platonic views and insights reflected in Western Christian theology (including the writings of St. Augustine) regarded the physical and biological world as inferior to humankind, as a resource graciously given to us by God for our use. At the same time, modern theologians have sought to affirm the biblical doctrine that the non-human creation is good in its own right without reference to humans. The result has been a pervasive and persistent ambivalence in the Christian response to the natural world. This ambivalence is to be found in the writings of theologians from diverse Christian traditions, from St. Thomas Aquinas and St. Bonaventure to Calvin and Luther, as well as more recent theologians such as Karl Barthe, Paul Tillich and Teilhard de Chardin. There have been exceptions in terms of this ambivalence, and it is interesting to note the role played by the present-day Lutherans of former East Germany, principally the Lutheran theologians at Wittenberg and Leipzig, who led the environmental movement and published a regular newspaper on these issues.

Early Western theologians identified in Christian thought about Nature two major motifs, which were regarded as the spiritual and the ecological. The spiritual focused primarily on God and the soul (as well as angels), and Nature, validated only in terms of spirit. The alternative, ecological approach, transformed this two-way relationship into a triangular one. Nature was no longer ignored, patronized or feared. Instead, it was seen as the necessary context for encounter with the divine. In such theologies, Nature ceased to be incidental to the primary relationship between God and humankind. It too, was treated as a fundamental parameter within this relationship. In St. Augustine's writings, there was a gradual shift from the purely spiritual (neo-Platonist) motif to the ecological.

The dominant view of Western Christianity (rightly criticized) may be regarded as the product of an attempt to resolve the ambivalence towards the environment by suppressing the ecological motif. Paul Santmire suggested that the ecological motif was capable of accommodating the valid insights of the spiritual motif. Unfortunately, many religious environmentalists concluded that the development of an adequate theology of Nature must involve the suppression of the spiritual motif. In doing so, they often threw out key elements of the Christian doctrine.

Apologists for Christianity have tended to recite a number of non-Christian and pre-Christian approaches to environment, which have led to environmental disaster, including the appalling track record of the Communist regime of the former Soviet Union. Capitalism, likewise, led to resource exploitation within which many environmental disasters have been, and continue, to be wrought. Even White, the main critic of the Christian doctrine with regard to the environment, maintained that no sensible person would claim that all ecological damage is rooted in religious attitudes.

It is not enough to simply offer counter-examples of blame for environmental devastation, nor to be satisfied with explanations of the way Western thought has evolved in this matter, including the misinterpretations which have occurred between dominion and domination. What is called for is that theologians develop a positive Christian theology relating to the environment. This must be based on the totality of our understanding of people's relationship to the world and nature. For in the last analysis, it concerns the fundamental issue of Humanity on the Earth.

Globalization and Greening

ALTHOUGH FOR CENTURIES PEOPLE HAVE HELD and articulated varying attitudes towards nature and the wider environment, the 1960s have been identified as the period in which a coherent philosophy and language encompassing the environment and relating to the global dimension of the environment were first formed. Since then, there have been significant changes in the way in which the environment has been viewed in terms of how it relates to development.

International Involvement in Environmental Issues

In the 1960s, environmentalism was regarded as a movement reflecting the concern of West European and North American white middle classes. Action groups supported by the media campaigned for the protection of animal rights, controls on whaling and the killing of other wild animals for economic purposes, as well as for the implementation of measures to reduce air pollution. Various doomsday scenarios were envisaged and formed the basis of a number of publications, notably *Silent Spring* by Rachel Carson.

Third World countries had not yet become engaged in discussion relating to the environment largely because they were preoccupied with trying to keep development programmes afloat. This was taking place against ever-worsening trade balances, resulting from the high level of imports, made necessary by the development objectives themselves. Increased dependence on imported energy in the form of fossil fuels, was to have even more disastrous implications both for the economy and for the environment in the following decades. Development programmes would certainly have been seriously hindered by environmental controls, so they were not to be adopted where development was a priority. Only the affluent countries could afford environmentalism; the emphasis in

the Third World, including the Caribbean, was firmly on development.

Industrial Growth and Technology

The first United Nations Development Decade of the 1960s was characterized by optimism and international cooperation. It was assumed that the development problems of the 'underdeveloped' world would be solved quickly through the transfer of finance, technology and experience from the developed countries. The thrust behind development was thought to be economic growth, which could be measured in terms of gross domestic product (GDP), and per capita income. These were to be generated principally through industrial growth and the modernization of agriculture. The technologies designed to bring about a revolution in agriculture were exemplified by those of the Green Revolution introduced first in Asia and later in sub-Saharan Africa in the 1960s and 1970s. Not only was this 'revolution' unsustainable, but it caused havoc in some cases, where the food produced per capita fell rather than rose. The failures were largely due to inappropriate technology, over-intensive farming methods and the need for large farm units to sustain the programmes.

Development brought about economic growth in many Third World countries during the 1970s (the second United Nations development decade) but, despite this, world poverty and inequality continued to rise. The optimism about solving the problem of underdevelopment solely in terms of increasing production began to diminish. Growth in national production did not reduce poverty but, rather, increased the disparities between rich and poor. The focus shifted to population.

Population Control

Neo-Malthusian ideas dominated views of the international community concerning the relationship between population and poverty. It was argued that population growth could not be matched by food production or economic growth and the consequences of this would be seen in increased poverty, starvation and mortality. Furthermore, because investments had to be spread across greater and greater numbers, a high population growth rate would have a negative effect on economic development.

The answer appeared to be the introduction of programmes for controlling population in developing countries. Family planning programmes throughout the Third World were funded by the international agencies. Caribbean countries were among the recipients of these programmes and recorded satisfactory measures of success in reducing fertility levels.

The rising volume of influential literature warning about environmental degradation also kept the population issue in view. Most notable among these publications were *The Population Bomb* by Ehrlich, *The Limits to Growth* by Meadows *et al.*, *The Death of Tomorrow* by Lorraine and *Blueprint for Survival* by Goldsmith *et al.*, all appearing in print in 1972.

It took some time before it became evident that population alone was certainly not the factor which would lead to reducing the disparities either between rich countries and poor countries or between the rich and the poor within the developing countries. Poverty levels were increasing and so were environment-related disasters. International attention was then turned to the relationship between poverty and environmental degradation.

Poverty and Environmental Degradation

The United Nations had hosted a seminar on environment and development at Founex, Switzerland, in 1971, where the concept of the incompatibility between environmental protection and development was reviewed in the light of the environmental degradation which was occurring as a result of poverty.

In 1972, the United Nations Conference on the Human Environment held in Stockholm used the term 'pollution of poverty', focusing on the lack of clean water and sanitation which threatened the life of many in the developing world. Unfortunately, what appears not to have been understood was that poverty in the developing world was not necessarily due to a lack of development? It was, in fact, one of the very consequences of the development process, including the rapid urbanization, which had accompanied that development. The crisis of urban poverty and environmental degradation was brought about chiefly through the spontaneous emergence of squatter settlements or 'shanty towns' around all major Third World cities. What should be done about these settlements became an insoluble problem for Third World governments throughout the 1970s and 1980s; the conflicts of interests involved were seen to present a major dilemma.

At the international level, the idea that environment and development were incompatible was replaced by the argument that it was the slow pace of development which was causing the problem and that development projects had to be implemented speedily. As a result, from the mid-1970s, countries from the developing world began to participate seriously in the international environmental debate.

Following the energy crisis in 1973 and 1974 and the declaration of a New International Economic Order, a joint UNEP-UNCTAD symposium held in 1974 attempted to integrate a general

assessment of development goals with new ideas in the field of environment. It was recognized that the failure of society to provide a safe and happy life for all was not one of absolute physical shortage, but of mal-distribution and misuse of resources. The symposium advocated a strategy of first satisfying basic human needs with due consideration for global environmental risks and 'outer limits'. The implementation of the New International Economic Order (NIEO) did not materialize, and the Fourth Development Strategy simply deferred the discussion of environment and development.

The challenge taken up in the 1980s was to formulate policies for action, which would integrate the environment and development in practice, with the emphasis on environmental conservation. The challenge was principally taken up at the international level. In 1980, the World Conservation Strategy (WCS) was published by the International Union for the Conservation of Nature and Natural Resources (IUCN) the United Nations Environment Programme (UNEP) and the World Wild Life Fund (now the Worldwide Fund for Nature). For the very first time, development was suggested as a major means of not only alleviating poverty but also of achieving conservation instead of obstructing it.

Many countries in both developed and developing worlds have taken up the recommendations of the WCS to form National Conservation Strategies. However, despite its comprehensive and action-oriented nature, the WCS has been criticized for being 're-packaged 1970s environmentalism' and as 'comfortable reformism'. Its approach generally underestimates the social and political changes, which would be necessary to implement a strategy intending to focus on sustainability by conserving the environment. In contrast, the World Commission on Environment and Development (WCED) Report places political and economic change high on the agenda as a requirement for sustainable development to be achieved.

Whatever the complexities, the interdependence of environment and development was recognized internationally, and the issues regarded as sufficiently critical, to justify the largest assembly of heads of government in history at the United Nations Conference on Environment and Development (the Earth Summit) held in Rio de Janeiro in 1992. In recognition of the particular concerns of small islands, a second major international conference on environment and development, the Sustainable Development of Small Island Developing States (SIDS), was held in Barbados in 1994.

The so-called 'Earth Summit' attempted to translate the new framework or paradigm of sustainable development into a global charter by introducing the notion of individual countries establishing an action plan, following a common agenda - Agenda 21. The Agenda sets each nation-state the task of approaching policy and planning for environment and development by means of implementing a complete package of all the aspects of national life. It incorporates all facets of social, cultural, economic, institutional, technological, infrastructural, legal and conservation components into an integrated national programme.

Jamaica is a signatory to Agenda 21 and to a number of international treaties relating to the promotion of sustainable development and protection of the environment. Subsequently, international standards have been drawn up by the International Organization of Standardization (ISO) to set parameters of acceptability in the areas of environmental auditing and environmental management systems.

Agreeing in principle to the terms and goals of the conventions is one matter; bringing them into effect is quite another. Agenda 21 requires inter-disciplinary thinking and multi-sectoral planning. If the government's institutional framework and public policy

machinery remain compartmentalized in their policy and planning strategies, then the agenda cannot become a reality. It requires a reorientation of thinking and reorganization of the government administration to implement it. For Jamaica and other developing countries, the dilemma lies in the question of whether the *status quo* will be defended and sectoral remits reinforced by the challenge, or whether the necessary commitment and breadth of vision will emerge to bring about the relevant change.

The International Debate on Environment and Development

Within the last decade and a half, concern about environment and development in the Third World has become a central feature of the rhetoric and thinking in development studies. Awareness of this aspect is by no means new. What was new was the scope and sophistication of the environmentalists' critiques of development and the focus on the need for social and economic change. 'Save the rain forests' campaigns and the articulation of opposition to investment in large projects such as dams are examples of the new activities which followed the earlier concerns about pollution, the extinction of certain species of whales and nuclear testing. What was also new was the approach advocated for implementing sustainable development, which called for a move away from dealing with environmental effects after they had occurred, to preventive action focusing on the 'policy sources' of these effects. More pro-active rather than re-active policies were advocated. In other words, there was an attempt to merge environmental issues into mainstream policy-making, rather than to providing mechanisms for cleaning up the environment as a peripheral and secondary issue.

How deep and how wide is this apparent revolution? Has there really been a greening of development? Has there been a revolution in ideology? The answer depends on the extent to which sustainable development or green development or eco-

development are words backed up by logical, theoretical concepts, rather than simply "rhetorical flags under which all kinds of different ships can sail". There is a danger that sustainable development might "hold a place in the litany of development truisms" rather than having a coherent, theoretical core. Put another way, it is a phrase with many meanings. If it is simply an environmentalist's prescription for development, lacking any explicit treatment of political economy and socio-cultural factors, then it is disturbingly naive.

It has been suggested that sustainable development is an attractive phrase and concept for development agencies and practitioners looking for new labels for liberal and participatory approaches to development planning. Development bureaucrats and politicians have welcomed the opportunity to adopt a phrase, which suggests radical reform, without actually having to specify the areas, which need to be changed or require specific action. The danger is that sustainable development could seem to be acceptable precisely because it does not demand radical change. Certainly, sustainable development is a valuable start to a process rather than the end. Much remains to be clarified but a reason for the ambiguous meaning of sustainable development is the ambiguity of meaning of development itself.

The neo-classical approach to environmental economics has as its primary aim the conversion of the environment into a commodity, which can be given a material or economic value and analyzed just like other commodities. Within such a framework, the concept of sustainable development eliminates the need for "that ill defined something called environment which cannot be quantified". Marxism also asserts that economic development under capitalism is about the creation of value as 'resources' are transformed into 'commodities'. But environmental 'laws', like the first and second laws of thermodynamics, suggest that matter and energy can be neither created nor destroyed, only converted from one form to

another. Any value they acquire in the process needs to be set against the longer-term cost or value of the processes of conversion. Even though the environmental resource may be commodified and given economic value, the process of transformation or conversion through its usage cannot necessarily be given a monetary value. The overall cost brought about by the erosion of cultural traditions and value systems, which accompany the societal changes implicit in the development process, are not included in the accounting. This is a serious omission even from an economic perspective, since the losses in cultural capital have both financial and non-material implications for the overall system. The cost of rising crime rates illustrates this point.

From a gender perspective, it is evident that in many cases the changes, which take place in terms of activities, which are environment-related, are followed, which also, need to be considered in the total equation. It is also evident that environmental conservation is frequently predicated upon social inequality, especially on the basis of class and gender. These considerations point to cultural and political aspects of society, which are important in the transformation of nature as development occurs and as cultural, technical and political limitations are placed on the human exploitation of nature.

This transformation of society, which has accompanied the processes of modernization and development and the relationships between groups within society, cannot be quantified. The changes have definite implications for culture. The overall impact is not usually for the better. Worst of all, the transformation is seen to have altered the very values themselves whereby society makes decisions about both environment and people.

The issue of sustaining the environment for its own sake, in other words, an ecocentric approach to environment, is not dealt with

within the framework of sustainable development, since development is itself an anthropocentric concept.

Wider Sustainability Issues

Despite the apparent simplicity of the official definition of sustainable development, it raises a variety of questions of sustainability of what, for whom, where and when. Not only physical resources but also welfare-generating goods and services are shown to have their origin in the economic system, from nature and from the social system. Changes in the sustainability of the users will alter the production of goods and services.

A distinction can be made between the sustainability of supply, uses and users of economic goods and services and non-economic amenities. In addition to the maintenance of produced and natural capital, the maintenance of human capital of labour, skill, knowledge and of institutional capital, providing the social, legal and organizational infrastructure for economic activities could also be introduced in a comprehensive discussion of the sustainability of the economic product.

The step between economic growth and the wider concept of development, from economic production to the supply of non-economic welfare-type amenities, is made by introducing two further sources or origins of human welfare; nature and the social system. Water, clean air, nutrient flows are not accounted for in economic statistics and are usually regarded as being 'free'. Other value systems might give them an 'existence value' due to their ecological, aesthetic or ethical attributes. Changes in their availability or quality, that is, their non-economic, ecological sustainability could be assessed in non-monetary terms through systems of environmental monitoring and statistics, including natural resource accounts.

The second source of non-economic welfare is the social system, which includes public efforts to meet development objectives of equity, freedom, health, security, and education. Aggregate indices need to be developed to measure the provision of these values, and therefore of the social sustainability of the development which is taking place. Further, where economic activities are balanced against these variables, their sustainability (or non-sustainability) can be measured or indicated. Economic, ecological and social sustainability must all be considered.

Despite the calls for the integration of environmental and developmental objectives, such integration has, by and large, not taken place in Jamaica. Issues of population distribution and concentration in urban centres, deforestation, erosion, pollution and resource exploitation continue to be the responsibility of specialized departments. Meanwhile, macro-economic policies focus on the maximization of economic growth and, recently, also on the attempt to tackle poverty. Environmental issues are addressed to some extent by environmental agencies but with little impact on socio-economic decision-making.

The Politics of Greening

The approach from a technocentric perspective on the environment is based on the primacy of economic valuation; the priorities of policy are in the management, regulation and rational utilization of resources determined by measured economic values. The approach from an ecocentric perspective is seen as not being able to provide the straightforward, pragmatic prescriptions preferred by policy makers and planners. But surely, these approaches should be seen as complementary, not as alternatives. Elements of both are essential and minor reforms will not be sufficient. The greening of development demands a radical analysis and a more transforming process than that forthcoming from the management principle alone. Though both perspectives are currently represented in

thinking about sustainable development, they are often in a confusing and apparently incompatible mix of essentially technocentric measures together with ideas of 'development from below'.

Despite flaws, the growth of sustainable development ideologies has had an impact on the consciousness that informs development thought and action. There is a new environmental awareness in development, which is perhaps evidence of greening of a kind.

Shades of Green

Within the political spectrum, shades of green have been identified as 'deep' and 'light'. The first looks for radical, social solutions, for instance in consumption and production, and dealing with poverty; the other tends to accommodate environmental problems within the prevailing social and political system. This is envisaged either through a free market economy and liberalization, with production and consumption conditioned, if not controlled, by transnational companies. It is not always clear what the political motivation in the environmental debate is and there are paradoxes. One such paradox is that in the popular perception 'ecocentrics' are usually seen as radical proponents of social reform and as essentially progressive. But looking at it from a different perspective, it would seem to be the reverse, and that it may be a middle class response to contradictions in capitalism, essentially conservative, reactionary and involving traditional political concerns. Certainly, there is a complete political spectrum in the environmental movement at both the global and local levels. Environmentalism is not politically neutral.

In Jamaica, environmentalism must not be allowed to push us towards a polarized political situation with particular interests served on one side or the other. To avoid this pitfall, it is urgent that open debate and wide representation in policy formulation and

decision-making are encouraged so as to avoid, or at least minimize, the polarization of interests. In order to make political cooperation possible; it is necessary to find the institutional structures and organizational combinations which would best accomplish the necessary tasks.

The primary task, which concerns us in this context, is the formulation of environmental policy, which includes all aspects of the environment; physical, social, cultural, legal, economic, and at various institutional levels. At the parish or community level, such environmental policies would involve local government deciding matters such as garbage collection and disposal, or the quality of district water supply and sanitation provisions. At the wider regional level, the issues concern more than one sector: industry, agriculture, energy-generation, transport; and affect more than one locality or parish. The issues relate to problems of deforestation, which impact upon entire watersheds, the coastal zone and beyond; and pollution, which spreads through entire underground water systems, rivers, harbours, the air and quality of rain over extensive areas. At the national level, environmental policies affect and are affected by global issues, such as the controls on the production of greenhouse gases or chlorofluorocarbons. These policies also relate to international standards of production, safeguards from toxicity in industrial and agricultural practices, decisions concerning nuclear reactors, the transport of nuclear waste and the testing of nuclear bombs.

The United Nations can act only as a mediator and catalyst for international activity. The actual implementation of most environmental behaviours has to occur at the national level. Thus it is pertinent that we should be concerned with institutional structures at the national level and, indeed, at the local community level, which would enable us to best tackle the complex problems that have a major environmental component.

The Distribution of Power and Environmental Management

Worldwide, there seems to be a situation where central government handles environmental policy and planning, against which the only countervailing force is the presence of non-governmental organizations (NGOs) and special interest groups based on environmental concerns. These groups may achieve some measure of success, since participation in the processes of persuasion makes them highly professional and technically capable. Moreover, the members of such groups are highly committed to the cause which they are attempting to advance, and have been permitted some measure of recognition at recent United Nations conferences. The price of acceptance by the establishment is that interest groups behave 'responsibly', that is, in accordance with the status quo. This is not always consistent with the objectives of the group. However, there have to be safeguards against the temptation for such groups to seek support for short-run local 'solutions' which might have harmful effects on the environment in the long run.

A counter-argument in the debate about the distribution of power in environmental management is that environmental policies should be highly centralized. Even the nation state may not be an effective manager of environment in cases where the impact of policies is trans-boundary and affects other countries or the entire global system. Alternative approaches include public participation whereby the community is the bedrock of decision-making, so that, individuals would be motivated more by the notion of stewardship than by regulation.

A new political ecology is required to develop a way of approaching environmental concerns from the perspective of public policy, the role of the state, the legal framework, the role of the NGOs, community organizations and pressure groups. These issues need to be on the agenda embracing, for example, environmental reformism ('enlightened capitalism'), the

management of practices to conform to international standards of production of commodities for trade, consistent with the international conventions and treaties to which the country is a party or signatory. At the same time, the political agenda has to include the concerns of radical community movements and eco-feminism. Thus, public policy needs to conceptualize environment and tackle environmental issues in a wider context as central to the decision-making process rather than as an issue to be handled solely as a problem and merely as an effect of other policies.

Green Development is not about the way the environment is managed, but about who has the power to decide how it is managed. Such development involves not just a pursuit of ecological guidelines and new planning structures. It must be an attempt to redirect change to maintain or enhance the relationships between people and the environment and, thereby, to ensure for the poor, the capacity to survive without patronage. While poverty may never be entirely eliminated, the quality of that poverty and the quality of everyone's life can change. Sustainable development is truly only the beginning of a process, not the end.

Conclusion

The Heart of the Dilemma

A STRONG CONVICTION AND SCIENTIFIC KNOWLEDGE are a powerful combination; but know-how without knowing what or why is a recipe for disaster. Science and technology provide us with the knowledge and most people associate the environment with science and technology. We need to consider seriously whether we know what science and technology mean to us, what questions we should ask of science and what limits we should place upon technology. Knowing what value we place on the environment, as an economic resource is now usually understood in the Caribbean to be of importance. We rarely think about the non-material meaning and worth of the environment either for its own sake or for the sake of the people who are part of it. We need to be reminded that the environment is, in certain dimensions, socially constructed, for it means different things to different people and societies at different periods of time. It is transformed by economic principles to become a resource, but its social constructions are also transformed even though we are often unaware of the change.

What should be done about the large percentage of our children growing up in places devoid of nature, or where nature is only hostile, is a serious dilemma. The implications of such deprivation have a profound effect at the subliminal level and influence the individual's attitudes in society. Yet an increasing number of children now grow up entirely in such environments. If it is not a dilemma, it means that the depth of its significance has not even been imagined, let alone fully understood, by policy makers and planners.

Decisions about the use of myths in the national or minority group interest, especially as the environment is packaged for sale as a

tourist product creates a dilemma. Are images of people singing and dancing in paradise those, which we really want to construct of ourselves? What are the differences in perceptions and vested interests, which have to be resolved before we are truly able to relate harmoniously, to both the 'natural' environment and the visible aspects of our heritage, which are important to us and our identity as a society? If only we could do so, it would make for a far more attractive, enduring and acceptable product for tourists.

Trying to make development sustainable assumes that it is recognized as being unsustainable. Can it now become sustainable by reducing the rate of resource depletion in various ways? Are we prepared to implement an economic system based on reduced resource use in order to protect the environment together with the social and cultural capital? This is a dilemma for, without some answers, the qualitative aspects of poverty reflected in alienation and criminality will undermine all attempts at economic buoyancy or survival, not just for the poor themselves but for the entire society.

How do we know what questions to ask in order to discern what the dilemmas are? It is important that we not only know what we are trying to achieve, but we also need to know 'why'. Why is it important that we should consider social, cultural and spiritual values and not only monetary and market principles in making decisions about the environment?

In trying to understand 'why', we are forced to confront the fundamental issue of how we, as individuals and a society, relate to our environment. Do we simply want power over it or are we concerned to become empowered by it? We also become aware of another dimension of the crisis: the separation of people from environment has now become so extreme and so pervasive in the dominant world-view, that even discussion about the people-environment relationship is minimal.

Greenprint for the Future

Unlike a 'blueprint' this 'greenprint' makes no specific prescription. Thoughts for action and a plea to challenge conventional wisdom are more relevant in this regard than the specifics of activities. Areas in need of urgent consideration are as follows:

1. In the matter of personal development, especially that of the child, the significant role of nature in particular and the environment in general, needs to be recognized and acted upon.
2. Education will change nothing if we use it to reproduce the same ideas. Education needs to challenge and sift ideas and find out what is positive in traditional practices. Environmental education most certainly must not be left to science alone. It must incorporate the arts, culture, and history of the society, and social sciences as well as philosophy, theology and psychology. It is undoubtedly through education in the widest sense that beliefs and values are crystallized and reinforced. It is essential that we reproduce the ideas, which will lead to the kind of society we want to become.
3. In the area of culture we need to find the environments we have lost. The pre-modern connection with Earth may contain a wealth of experience from which we may learn. To regain cultural capital will assist us in recapturing some of the respectability codes, which in the present environment have been lost to the commodification of people and people's time. The nurturing of our collective spirit will help us to establish the balance and not to allow our society to be totally destroyed through the changes associated with development and modernization. Social and cultural dimensions of environmental quality need to be fully

integrated into future development planning and not be left as a mere adjunct to it.

4. In the economic sphere, reduction in dependency is an objective which could be achieved through greater reliance on, and development of, local resources, especially in the areas of renewable sources of energy (for example sun, water, wind, waves) as well as in agriculture, fisheries and manufacturing. Even in economic production, 'small' can be beautiful and can provide a worthwhile partnership with larger company interests. Niches should be established now, based on high standards of environmentally conscious production, which will earn us a valuable reputation in international markets. This would apply to all goods marketed, including all aspects of tourism. Above all, we have to decide what levels and what kinds of production and consumption are really in the interest of our nation, taking social, cultural, spiritual as well as economic factors into consideration.
5. International conventions to which our country is a party or signatory have to be taken seriously and made operative through the institutional reorganization, which seems most appropriate. Furthermore, at policy levels, short-term 'solutions' must be incorporated into, and not predominate over, the long-term objectives. Above all, laws enacted to safeguard environmental and related objectives must be strictly enforced.
6. At the pragmatic level, matter cannot be created or destroyed, and this needs to be remembered in the way we produce, consume, discard and recycle.
7. Since the heart of the dilemma appears to lie in the chasm, which has developed between people and environment, the main thrust of all our endeavours should be to re-establish the connection. In the Caribbean context, religious leaders and community

leaders at all levels have a significant part to play in this regard.

Bombarding people with more and more information about the nature of the environmental crisis and the numerous cases of doom and gloom is unlikely to change the situation. Certainly, it has not forced people to make the kind of hard decisions about global and national economic systems or personal life-styles that would tackle the environmental dilemmas. Let us not believe, however, that change cannot take place. Economic principles and moral persuasion are a dynamic partnership. The ending of a system as all embracing and deeply rooted as slavery in the Caribbean bears eloquent testimony to this fact.

Despite the short-term discrepancies in the benefits derived or the sacrifices suffered, ultimately we have to come to terms with our collective interest in the ways we approach the environmental dilemma. The responsibility for a greener future lies with each of us, and each of us will be affected if we lose the opportunities, which still remain. As John Donne wrote more than three hundred years ago:

*No man is an Island, entire of itself,
Everyone is a pail of the main . . .
And therefore never send to know for whom the bell tolls;
It tolls for thee.*

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