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THE ROLE OF HUMAN KNOWLEDGE AND RESPONSIBILITY IN ENVIRONMENTAL AFFAIRS

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ABSTRACT

THE ROLE OF HUMAN KNOWLEDGE AND RESPONSIBILITY
IN ENVIRONMENTAL AFFAIRS

By

Raymond Paul German

History chronicles human activity and evidences growth in human knowledge. The last 200 years has been a time of rapid growth in human knowledge. In our environmental affairs this knowledge can make us aware of the effects of our actions on the environment.

Increased awareness of our environmental impacts should lead us to acceptance of responsibilities properly ours for those actions. The last twenty years reveal that this has not been the case. Man still resists ownership of his responsibilities, individually and collectively, for the quality of the environment within which he lives.

Hope for the prospering of human life on earth lies in man's acceptance of his role as steward of the earth and as steward of himself in an effort to become more fully human using his creative abilities to the utmost in order to live with, and not against the earth.

To Sanford Farness, borrowing from the writing of the late Loren Eiseley in The Invisible Pyramid, for being "my last magician" and for allowing this work to develop in its own time and at its own speed; and,

to Marte Milks, for the human encounter that we share in life; a relationship based in the very rich and fulfilling tradition of Martin Buber's I and Thou.

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INTRODUCTION

The rush of scientific breakthroughs occurring after the end of World War II brought many varied benefits to mankind in the form of improvements in the quality of life. In general, our ability to gather data about the human condition improved markedly with advances in the fields of electronics and telecommunications, especially during the last twenty years. Humankind is gradually becoming more aware of its relationships to the earth, and the different environments on it that support life. Our new awareness of the web of life on earth has brought with it knowledge of the environmental degradation that has been taking place on earth throughout history.

Faced with knowledge of our effects upon the earth, we are at a turning point in human history. Our choice is between accepting the responsibilities truly ours for creating conditions supportive of human life, or pursuing another course of action letting the future of life on earth hang in the balance.

/Man finds himself in numerous and complex relationships with the earth that supports his life./ Beyond

the quantitative aspects of this situation lie other factors making man-environment relationships even more difficult to grasp and understand. The influence of our political and economic systems is directly felt in our environmental affairs. The choices available to us environmentally are limited intentionally and unintentionally by our particular political and economic beliefs.

As humans in an environment, we also fall prey to the workings of the perceptual system that is so critical to the continuation of our lives as individuals and collectives. Grasping the roles of environmental quality in supporting human life requires that we rely on our perceptual system for information -- an act of trust so implicit in our everyday lives that we seldom consciously ponder the risks involved.

Our technological capabilities, the sheer number of persons living on the earth, and the rush of events that characterize life in the last quarter of the twentieth century, all combine to cloud the issue of human knowledge and responsibility in environmental affairs. Not only do we have the ability to think, but we can also think about our thoughts -- a situation demanding that we exercise our responsibilities for our thoughts and the actions based upon them.

The political and economic systems that so directly shape our lives are not likely to generate the changes needed to ensure continuation of life on earth, if left to their own resources. The level of society holding simultaneously the greatest promise for change as well as the greatest challenge to accomplish those changes is that of the human self. It is doubtful that we can continue to associate environmental degradation with the amorphous and elusive "them" without witnessing continued degradation of the earth. It is doubtful that we can continue to ignore our personal responsibilities for environmental quality without this act of omission leading to conditions that are inimical not only to the physical aspects of life on earth but also to the spiritual aspects of that same life.

We know that we exist in a relationship with all other forms of life on earth that resembles a fragile web; we know that almost every action we take has an impact on the quality of the environment in which we live; our ability to engage in reflective thought prevents escape for our knowledge and leads us to acceptance of our responsibilities. We are faced with acknowledging our role as steward of life on earth, all life, and with taking the responsibilities properly ours for perservation of that life and for recognizing that the earth is not simply an accumulation of minerals, gasses and assorted matter but that it is an

organized, purposeful entity bearing many of the same qualities and characteristics as man. Once we have acknowledged this relationship, there will be no need to deny the affinity we have for the earth, nor the responsibilities we bear toward it, and we can begin to go about the work so clearly and eloquently outlined in the work of Pierre Teilhard de Chardin: Building the earth.

> Without any doubt men today suffer and vegetate in isolation; they need a superior impulse to intervene and force them to pass beyond the level at which they are immobilized, leading them to discover their profound affinities. The sense of the Earth is the irresistible pressure which will come at the right moment to unite them in a common passion.
>
> The resources we enjoy today, the powers and secrets of science we have discovered, cannot be absorbed by the narrow system of individual and national divisions which have so far served the leaders of the world. The task before us now, if we would not perish, is to shake off our ancient prejudices, and to build the earth.
>
> ...Pierre Teilhard de Chardin...

Chapter One: Objectification of the Natural Environment: the Transition from Spirit to Matter

Introduction

The realm of man-environment relationships is both fascinating and complex. Man and environment are variously defined depending upon context with one definition of environment being the natural environment: the environment not made by man. This particular form of environment will be the focus of this chapter. The discussion to follow will explore the transition of the natural environment from spirit to matter as reflected in man's conceptual approaches to nature. Consequences of this shift will also be presented. Points to be considered include: the concept of the sacred as applied to nature, animistic and mechanistic approaches to nature, the objectification of the natural environment, and policy development in a framework of technology and economy within which the natural environment is viewed as an object.

The Concept of the Sacred in Man-Environment Relationships

The religious bond between man and nature appears as an element of most civilizations. Expression of this bond has taken varied forms which can be subsumed under the heading of "the sacred". The cosmologies and mythologies of man reveal what appears to be a basic human need: giving meaning to the cosmos and to nature. (1)

Approaching nature as having a sacred aspect resulted in particular modes of human behavior with respect to nature and the natural environment. Man-environment relationships in cultures subscribing to the sacred character of nature usually exhibit a recognition of the interdependence of man and environment. Although positing a sacred character of the natural world may have been done due to a lack of scientific knowledge this situation is not the disadvantageous position it might presently seem to have been.

When man developed means of altering the natural environment for advancing human life, a dilemma quite easily arose: How could man appease the sacred character of nature, the gods he worshipped, for his manipulative acts in transforming the natural world? In the process of cultural advancement the sacred character of nature received diminishing attention. Man began to free himself from the "chains" of his beliefs about the natural world. The trend to anthropomorphism in religion led to the forest, sky, and river losing their place in the spiritual heirarchies worshipped by man only to be replaced by deities in the image of man. Not only does this "secularization" of nature appear to have been difficult for man but the resultant changes in man's approach to the natural world had far reaching impacts, some of which are with us today.

"The reason we are now desecrating nature is not because we use it to our ends but because we commonly manipulate it without respect for the spirit of the place." (2) Acknowledging the sacred character of the natural world limited human activity and, for a time, prevented massive degradation of the environment.

> If nature threatened to get out of hand, magic was expected to help. It was an I-Thou relationship, with all the ups and downs inherent in even the closest associations. It was also a total relationship, in which man was dependent on the universal character of nature and dimly aware that there was nothing that could not influence in one way or another his own existence and attitudes toward the surrounding world. (3)

Some may argue that this element of respect unduly restrained human cultural advancement, at least as far as the natural world was concerned. In theory, that position might be correct, but the events of the twentieth century have shown that removal of respect for the natural world from societal values does not ensure that new values adopted in their stead will have beneficial results for human life.

> By the twentieth century animism was relagated to the limbo reserved for sentimental poetry and quaint illusions. Nature's reflections of human mood in literature was labeled "pathetic fallacy" by the literary-minded choosing their support from psychology and anthropology that it was a repressive, childish, or primitive urge to personify the world. It was as though the positivist critics thought that all of nature was pushing to copy man's image and none of it deserved the privilege. The general idea found further refutation from the scientific denial of consciousness to bird, tree or mountain. (4)

In many instances, primitive man worshipped the natural world, or parts of it, as gods. The dialog between man and nature characterizing early man-environment relationships is less apparent in our modern world; not only less apparent but also less of an integral aspect of our overall man-environment vocabulary.

Primitive man knew the natural world as a sacred being, not just as a physical object. Man respected his deities because of the awesome power they could unleash. Not having the knowledge of Western science, primitive man viewed the thunderstorm, flood or tornado more as the violent rages of his gods than as interactions of elements in the weather system. In short, primitive man, whether he was consciously aware of it or not, exhibited behaviors indicating that he recognized the need to live in harmony with the natural world because his safety and well-being were dependent upon his relationship with the gods of the natural world. (5) The net result was a lifestyle aimed at harmony with the sacred, natural world.

"Nature was actually as well read as an alphabet; it was the real 'tool' by which man survived with a paucity of practical equipment." (6) Man-environment relationships became dialogs in the sense of interchange and interdependence;

relationships similar to the I-Thou framework of Martin Buber. Man's response to the sacredness of nature enabled an I-Thou relationship to take place. Our current situation is not as fortunate. Man's response to nature is now that of subject to object, of man to commodity. True to the nature of I-Thou relationships, modern man treats the natural world as if it were an It, and not a Thou.

The Transition from Spirit to Matter

In animism and other similar forms of religious belief, the natural world proved to be an excellent symbol for the higher forces sought by man to explain his existence. As man's knowledge of the world increased, as his life became more complex, man became more aware of and able to reflect upon his existence. As he became the "measure of all things" the explanations he used to give meaning to nature and the cosmos changed to reflect his new understandings of the world around him. Only now are we witnessing a diminishment of anthropomorphic trends in human life, as the gods of man begin to take on the universal forms more appropriate to them as spirits of the cosmos. Yet, the natural world that provided the stage for the development of man still holds a spell over him evidenced in the longing for exotic, far aware places, for wilderness, and for communion with the virginal, natural world. We appear to

carry with us both genetically and psychologically the imprints of our ancestors relationships with nature. Overlooked and ignored in the frenetic pace of life in a mechanized world, these imprints are living evidence of a time when man lived within and with the natural world, as opposed to in control of it, yet isolated from it. Approaching the natural world as a spiritual entity may again provide man with the sense of wholeness that he seeks but seems not to find in his manufactured, mechanized world.

Wholeness certainly includes a satisfactory psychological life filled with the symbols and images so necessary to human survival. The natural world was able to provide the symbols and images to fill man's psyche, and to give form to his archetypes. As man explained the natural world around him, harvest gods, fertility gods, and gods of the hearth became indicators of man's needs in life: sustenance, survival, and security.

Direct and immediate contact with the natural world and its rich imagery while possible for our ancestors, is more difficult in the modern world. Primitive man, not yet technologically skilled, was faced with adapting the natural environment to meet his needs for food, shelter, and clothing. As a result, primitive man lived very close

to the natural world, a physical proximity promoting emotional and psychological ties extremely difficult to develop in built environments. Eventually, the direct contact between man and the natural world was replaced by a more distant relationship as hand tools and machines were introduced into human life. In yielding to the use of tools and machines to improve the conditions of human life, man gave up direct physical contact with nature. As built environments became more common, access to the natural world began to decrease as did the amount of the world remaining in a natural condition, thereby ensuring the difficulty of man's return to an I-Thou relationship with nature.

The Earth as a Commodity

The transition of nature from spirit to matter can also be stated as the shift in man from symbolizer and myth maker to economist and technician. When trees "became" nothing more than fuel sources, they were transformed into commodities with specific utility: resources. Man's shift to an economic mode of thought placed emphasis on the utility of nature. Certainly, the natural world does have utility in the sustenance of human life. But, to emphasize that utility to the exclusion of values arising from the spiritually nourishing role of the natural world is to complete the swing of the conceptual pendulum from the

pole of "spirit" to the pole of "matter". A swing that gradually reduced options available for man in terms of relationships with the natural world.

The utility of objects reflects the value structure of the people using them. (7) The natural world has become an object for man, an indication of prominent values in human life: survival and ease of life. As the natural world gradually held more utility for the support of human life, its sacred character diminished in proportion to its new found utility.

Departing from the direct contact with the natural world led modern man to a relationship with nature in which it occupies the role of object and abstraction; neither of which are adequate to meet the psychological needs of man. Our conceptual approach to nature is filled with terms both economic and technical in origin. "Geometrical space has replaced divine and cosmic, mythical and magical space." (8) Literally, we no longer live in the physical or psychological world of our ancestors, but are adrift in an unfamiliar and sometimes psychologically hostile, world.

The Manipulation of the Earth

As an object, the natural world can easily be manipulated. Our abilities to do so have been steadily

refined during the past two-hundred years to a point that we can now impact the earth in quantities and at speeds never before possible. The machine has been instrumental in the development of this capacity in that it "... increases man's ability to manipulate his environment through operations performed at a great distance from that environment." (9) As matter, the natural world is subject to human manipulation based on a utility evaluated in economic terms.

Overall, the manipulation of the earth to meet human needs has resulted in an improvement in the quality of life but not without exposure to psychological and physical stresses, a segmentation of the natural world by political boundaries, and a diminishing access to remaining portions of the natural world.

Psychic and physical stresses are not easily quantified for evaluation unless they have initially been isolated and identified. Research in this area has not been a primary interest of our medical and scientific professions. Judging the effect of man's isolation from the earth on him is difficult, especially so when the parameters used to develop the judgement are almost purely quantitative. Man, as a psychological being lives as much in the world of emotions as he does in the world of matter. This "dual

citizenship" is not well reflected in the cost-benefit analyses adressing environmental impacts. And, when emotions are addressed, potential impacts must be versed in subjective terms, terms not held in high regard by the "hard" sciences.

The refinement of human social organization along with our atomistic approach to nature have produced a segmentation of the earth. The major effect of this environmental segmentation is visible in our political jurisdictions, as they crisscross the natural environment irrespective of the functions and characteristics of that environment.

The earth is a continuous body with features that do not respect human administrative segmentation. "Due to the rise of specialization, the environment has been treated as if it is made up of discrete parts. It is a totality, however, and the necessity to consider it as such cannot be overemphasized." (10) Political jurisdictions cross or share natural features in rather arbitrary manners. Nations, or local governments may share a single river as a boundary, each valuing the river to greater or lesser extents, and each taking more or less care in their actions that impact that river. One environmental feature is subjected to the actions and manipulations of a variety of unrelated and perhaps uncooperative political jurisdictions. The natural

systems that comprise the earth operate according to their own rhythms and patterns and not necessarily in conformance with arbitrary political boundaries. (11) The artificiality of political boundaries further complicates man-environment relationships due to the fact that multiple political units and the resultant disorganization of their independent acts makes environmental quality not only difficult to achieve but also a local or national issue rather than the global issue that it is.

Although segmentation of the environment may be cost-effective and politically expedient, it is not similarly effective in achieving environmental quality. The political boundaries that hide or confuse environmental issues also support economic systems, each affecting the environment in some manner. The ecosystem has been apportioned into a "pie" of resources used by political entities for their economic benefits. Man has made the achievement of environmental quality a goal subservient to the achievement of the primary goals of his many economic systems. Human political nature perpetuates the dominance of self-seeking activities over the attainment of environmental quality in a manner that promotes gratification rather than sacrifice and cooperation.

Access to the Natural Environment

In an economic mode of thought, land is a resource subject to private ownership, at least in many nations. The character of our built environments has made contact with the natural world quite difficult through the absence of an integration of the natural and built environments. In this country, political jurisdictions provide some surrogates for the natural world in the form of park and recreation areas. But, "...man cannot live without some measure of contact with nature. It is essential to his happiness." (12) And, our park areas reflect more of our present attitudes toward recreation rather than an underlying psychological need for contact with nature.

A vast amount of land still exists in a natural state but access to it is limited economically, politically, or physically. The art of city building and planning seems reluctant to take steps toward an integration of built and natural environments. "We continue to visualize our cities as embedded in nature long after nature has been in fact surrounded by the urban environment." (13) The myth of nature in the city has been perpetuated and we are suffering the consequences as we continue to live in stress-filled, built environments.

The process that will determine the character and role of wilderness areas in the future is a political process as well as a legal process. Preservation of natural areas is not a goal recognized as essential to the survival of human life. In that regard, such preservation activities are in opposition to development activities proposed by economic interests. Assaying the rights of both parties is a difficult process, especially when the tax-based nature of governmental preservation activities is taken into consideration. If wilderness preservation, and access to it, is proposed as a governmentally provided, tax-funded service the rights of parties having other designs for that area must be taken into consideration under the legal philosophy prevalent in this country.

As long as competing interests and values exist relative to the use of land and other natural resources, conflicts in policy development and program implementation are inevitable. If decisions are made predominantly on the fact that we have the technical and economic capacities to undertake a particular project we will be perpetuating an approach to the earth that views it as so much of a very valuable commodity, as so much matter. Wilderness areas, when maintained in a natural state, do not appear to provide economic benefits to man. The task ahead if some part of

the natural world is to remain in that state, and also to be accessible to man, is to formulate preservation activities in such a manner as to emphasize their benefits and values, especially those of economic and technical natures. Only by broadening the value base contained in those two positions can we expect to develop environmental policies recognizing man's physical and psychological natures. Only then will we begin to approach environmental quality in an active, rather than reactive, manner.

Summary

Man is no longer predominantly a myth-maker in the mold of his ancestors, especially with regard to the natural world. Our myth-making activities and symbols have changed to reflect the strong emphasis we now place on matters of economy and technology.

> Modern man . . . has come to look upon nature as a thing outside himself --- as an object to be manipulated or discarded at will. It is his technology and its vocabulary that makes his primary world. If, like the primitive, he has a sacred center, it is here. Whatever is potential must be unrolled, brought into being at any cost. No other course is conceived as possible. The economic system demands it. (14)

We tend not to encounter the earth but we are more apt to evaluate it and conceive of it in economic terms. Once perceived as having a spiritual nature, the earth has become for us a solid, life-less object of our manipulations.

Immediacy, once the keynote of man's encounters with the earth is largely absent from human life. Our hands do not often come in contact with the earth. We have allowed tools and machines to become the intermediaries in our man-environment relationships. "Because man is still of the earth he too loses attributes essential to his survival when he allows the technological way of life to dissociate him completely from the natural world." (15) The new view of the earth as simply matter has been joined by a view of the human organism as so much matter, and, at times as a highly tuned and developed machine. (16) Neither event has been very positive in terms of leading to man-environment relationships capable of ensuring the success of human life on earth, as well as the future of the earth, itself.

Earth Day 1968, was a benchmark for the "rediscovery" of the human need for the natural world, for environmental quality, and for an understanding that the earth is a partner in human development. The isolation of man from earth, the domination of the earth by man probably peaked during the 1960's. "By the late 1960's the environmental bandwagon has begun to roll. Survival had become an issue." (17)

As the conceptual pendulum symbolizing our attitudes and approaches toward the earth begins to swing back to a

position of earth-as-spirit, it will pass through a center position of balance, through what the Buddhists might call the Middle Path. If the swing of the pendulum is allowed to make a full traverse to the earth-as-spirit position, man-environment relationships will likely suffer as much under that excess as they have under the name of materiality and progress. The illusive middle point of balance, of spirit and object, should become the goal of the environmental movement. Blind adherence to environmental goals without recognition of political and economic realities will not serve to promote success for the environmental movement. And, as in other aspects of human life, overstating the case is often necessary to secure the attention of a desired audience. The trick lies in not becoming caught up in the rhetoric of environmental quality to the point that its goals are pursued only by zealots and fanatics. The continued success of human life on earth demands otherwise. The spirit of the earth must become a familiar concept to the complete socio-economic spectrum of the population of the world.

The very nature of the process of gaining popular acceptance of the earth-as-spirit view point is an obstacle to that acceptance. Dedicated, active leaders of the environmental movement, deeply steeped in the values they promote often appear as fanatics, as prophets in the wilderness, rather than as human beings "just like us".

Until we can recognize these individuals as human beings like ourselves, we are not likely to identify with the causes they espouse as causes affecting our lives.

We must realize that a continuation of the earth-as-matter view point will mean continued exposure to physical and psychological stresses in our built environments, and in our everyday lives. There is evidence that our overemphasis on the earth-as-matter approach is lessening. But this is neither reason for celebration or cessation of actions to achieve environmental quality. It is reason for a reaffirmation of the need for environmental quality and more determined efforts to achieve that goal. Strangely enough, as the need for environmental quality becomes more widely recognized, the remaining resistance to the actions necessary to achieve that goal will likely become stronger as they prepare for the final battle.

With some of the basic issues of the objectification of the natural world established in this chapter, the remaining portions of this thesis will address the forces responsible for this situation as well as those forces capable of regenerating an I-Thou relationship with the earth, with regenerating the spiritual aspect of the earth in the minds of men.

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Chapter Two: The Impact of Technology on Man-Environment Relationships

Introduction

Throughout history, humanity's marks upon the surface of the earth have been made in a variety of ways some indicating the heights of human civilization, others the depths. The ruins of civilizations past serve as reminders of their achievements, knowledge, and culture. Certainly, our civilization is in the process of making its marks upon the earth. Exactly what elements will survive as indications of our existence remains to be seen.

The last 150 years has been a time of unprecedented technological advancement. Mankind has moved from the era of horse-drawn transportation into the age of the jet and rocket. We have come to know instantaneous world-wide communication as a reality of everyday life. Machines are now used in the process of building other machines. And, at least symbolically, if not in actuality, our cities reach toward the heavens in defiance of gravity. It would be difficult to imagine that some examples of our technology will not survive us.

Mankind has crossed many thresholds on the path of progress. Each time a new technological advancement is

introduced, relationships between man and environment are altered. While not all advancements have a force substantial enough to radically alter man-environment relationships, many new technological steps forward have made impacts on our daily dialog with the environment. Indeed, as we come to know more about the nature of man-environment relationships, we also come to know more of the subtle changes that have taken place within those relationships. Perhaps the most notable change in man-environment relationships resulting from technological advances lies in the fact that man now exists in a plurality of environments.

The natural environment exists in contrast to the man-made environment in which we live most of our lives. We now encounter built environments that seldom offer the fulfilling and satisfying integration of the natural and man-made worlds. If no other threshold had been crossed save that from natural to built environment, we might have developed a keener sense of the monumental impact of that event. However, at least four other major technological advancements produced effects of a caliber similar to the objectification of the natural environment. They are: the machine, the automobile, elevators and structural steel, and telecommunications.

While we have been quite adept at understanding the importance and worth of each of these improvements in our way of life, we appear to have little desire or motivation to grasp the impacts made by each development on the very fiber and character of our environmental relationships. Technological developments, while playing roles central to the enhancement of the quality of life, have, nonetheless, been equally as contributive to the separation of man from environment -- to an isolation of man from the source of his life: the earth.

Although technological advances can produce improvements in the quality of human life, such improvements are not obtained without costs. Whether we speak from a Western perspective and use the Second Law of Thermodynamics or take an Eastern view and rely on the interplay of Yin and Yang, the result is the same: advances do not occur without consequences. To be fully cognizant of the worth and value of the four events cited earlier, we require a knowledge of their benefits as well as of their costs. In an age when technology and economy have formed the "x" and "y" axes of a Cartesian plane of values in the Western world, extra care is required to adequately consider non-economic costs of technological advancements. With Chapter One having set the stage for consideration of the environment-as-object point

of view, we will now delve into the primary vehicles used to manipulate that now familiar object.

The Machine

We center our lives around devices which make life easier, safer, healthier, and more enjoyable for each of us. An attack on machines, per se, is not only futile but also logically weak. The human condition has been improved through the invention of machines but we are beginning to identify the costs of that improvement.

Wide spread use of the machine has given rise to two major consequences directly affecting man-environment relationships. First, the machine has become the third party in what once were man-environment dialogs. In any relationship, the introduction of a new party upsets the previously established balance. Values once derived from the interplay of two parties must then become based on all parties constituting the new relationship. Quite simply, the machine has become the intermediary in man-environment relationships. (1) Man now approaches the environment <u>through</u> machines. The environment-as-object is manipulated, inventoried, and analyzed by machines. Machines amplify human physical and mental power and can be used to amplify, heighten, and extend the capacities of the human sensory

system. Although increased environmental awareness gained through machines is beneficial the danger lies in our awareness being "second hand", or limited by the design of the machines we use. In terms of our conceptual approach to the environment, a relationship to the environment through machines may lead us to attribute mechanical properties to the environment that are not appropriate.

As man's knowledge of machines increased, he began to realize their "rationality" or logical "behavior". The cause-effect aspect of machines is probably what makes them so attractive to man. If a machine malfunctions, there is a reason -- a logical reason based on the operating principles of the machine. The well orderedness of machines is appropriate to them but leaves much to be desired when used to model environmental systems.

To approach the environment as a mechanism -- an object having mechanical characteristics -- assumes that we understand or have identified the rules and effects governing the operation of that "machine". Environmental research proves that we are still learning about the manner in which the environment operates. Given that fact, it appears highly suspect to perpetuate the environment-as-machine conceptual approach in our environmental relationships

The Machine: Applications in Environmental Modeling

The manner in which we approach a task biases the success or failure associated with the task. Examining environmental issues from a point of view supportive of the mechanical "nature" of the environment will likely result in findings affirming our approach. The question that must be asked relates not to the utility of accurateness of the application of mechanical properties in dealing with environmental processes but to the consequences of such an approach. Modeling environmental systems using mechanical properties yields difficulties when the environment becomes for us, a machine, as opposed to a system with some mechanical properties. Our identification of the environment as a machine results in a step backward in our environmental relationships. Superimposition of mechanical characteristics in environmental modeling will enable man to better understand some functions of the environment but it will not change the essence, rhythms, or cycles of the earth.

The environment-as-machine approach assumes that the "machine" can be fixed when it malfunctions. Provided we have sufficient knowledge about the environment, our approach is valued; however, our knowledge is limited, but increasing daily. The major resistance to changing this approach lies in the fact that it is extremely compatible

with our economic system and technological capabilities. In a reinforcing relationship, the environment-as-machine approach ignores emotional and psychological costs arising from environmental breakdowns while the values of technology and economy also shun these non-numerical costs in a cycle that becomes increasingly more difficult to break. "We have learned that although man is astonishingly adaptable, many of these adaptations occur at a price, and that he has the privilege of responsible choice for his destiny." (2)

Introduction of the non-economic and non-technological costs as a third axis in the existing Cartesian plane of technology and economy will broaden our valuation process. As long as we encounter the environment as an object, the issue of emotional and psychological costs imposed by our overemphasis of technology and economy will likely remain hidden from view. "Ever since the Scientific Revolution, nature has been depersonalized and the awareness of the total relationships between man and nature has been fading." (3) Martin Buber's I-Thou framework has some potential for restoring a sense of holism between man and environment and lessening the impact of the machine as an intermediary in man-environment relationships.

The Machine: Intermediary in Man-Environment Relationships

Buber placed a strong emphasis on the encounters that take place in human life. In a very real sense, we can come to know another human only if we directly and openly encounter them in life. (4) We do not know another through a third party. Our knowledge is then, of the person, which is not necessarily the same as the person, himself. To "know of" does not always entail knowledge of the essence of the other. Only direct encounters reveal the essence of another to us. In man-environment relationships the encounter plays the same role. Only if each human being encounters the earth and allows it to reveal its essence can we hope to construct holistic man-environment relationships benefitting both man and earth. To encounter the environment is not to approach it as a machine nor through machines. To encounter the earth as an object is to address it as an inferior and not as an equal partner in human life and growth.

Although machines have effectively reduced the earth to a large city, they have simultaneously made direct encounters between man and earth more difficult by increasing the psychic and emotional distance between man and earth. (5) Machines have become necessary to various life activities where they were once not present. The discussion that follows will focus on three specific types of machines and their impacts on man and environment.

The Automobile

The scale of built environments prior to the advent of the automobile was purely a human scale in horizontal surface area. (6) The built environment was tailored to the speed of human walking or animal-aided transportation as was the sense of time in these environments. (7) Prior to the wide spread use of automobiles, cities were not the sprawling horizontal surfaces as we know them today. The geographic spread of Los Angeles was not possible without an efficient and speedy means of traversing the great distances involved. The automobile, as a means of traversing horizontal distances rapidly became an intermediary in man's relationships with his environments. Although we are now experiencing a redefinition of the efficiency of the automobile in terms of fuel costs, it still functions as the "right arm" of most Americans to negotiate their cities.

Travelling in an automobile requires humans to explore the surrounding environment from inside a bubble. Environmental encounters in these instances are "second hand". We know of the environment as we pass through it in an automobile. Our encounter, if it does not pass beyond that level, is less than an optimum encounter.

The built environment consist of spaces, some of them arranged to accomodate the automobile: streets.

Although transportation accounts for the greatest use of land in our urban environments, very little goes on in that type of space other than the movement of goods and people from place to place. The actual purpose of travel usually does not take place in the streets, but in the non-transportation space of the built environment, spaces designed for human, face-to-face communication. Our observations of the environment from within the bubble of the automobile are limited, but still important in our overall relationship with the environment, provided we do not rely on them solely as the source of information about our built environments. Since the encounter from within the automobile is not a direct encounter, we may be cheating ourselves because "... in the end you have to go out and see for yourself; because seeing is a most personal experience and is influenced by all that you have learned and seen throughout your life." (8)

The automobile represents a two-edged sword:

1) Our built environments have become geographically spread out beyond the human scale, altering the space and time of those environments from the human scale to the machine scale thereby increasing our emotional and psychological distance from the natural environment;

2) encountering the environment through the automobile bubble severly limits our knowledge of the environment and the transportation function begins then to shape our overall sensory impression of the environment around us.

The automobile has increased human freedom but it has also become a negative force in urban design. Most of our built environments cannot function without some form of mechanized transportation and our psychological dependence on the private automobile almost dictates its continued use as the primary mode of transportation despite spiraling fuel costs. Without the automobile we would find it difficult to maintain the social, work, and recreation patterns so popular in our society. But, we may not have much of a choice in that regard if we do not begin to reshape our thinking about transportation. "We paradoxically cling to the expression of distance in terms of miles rather than minutes, and we still think in terms of transport than communications." (9) The dilemma is complex and frustrating with the most likely solution being in the development of the non-transportation areas of our built environments to promote more man-environment encounters, and in an increased reliance on our communications system whenever possible as a substitute for transportation.

By increasing direct encounters with the environment, we may be able to shake off some of the problems brought on by the mass use of the automobile. In any event, planning and design of future built environments must take into consideration the role of the automobile as an intermediary in man-environment encounters and provide plans and designs suitable for promoting direct man-environment encounters.

Construction Technology: Elevators and Structural Steel

During the early portion of this century our built environments began to expand vertically due to the advent of elevators and structural steel. Coupled with the horizontal expansion made possible by the automobile during the same time period, the net result was a bi-directional growth of our built environments: horizontal spread and core densification. The skylines of our cities exhibit this two-pronged growth quite well. Vertical expansion meant an ability to concentrate more activity on less land than had historically been the case.

The built environments constructed during the 1920's and 1930's changed the world of the pedestrian through increasingly taller buildings limiting human sight in all directions and making streets into tunnels for transportation and vision. Although these new built environments sensorially surrounded their inhabitants, the effects of the elevator and structural steel in city building were not all negative.

Consider for a moment the probable design of our built environments if we lacked the technology to expand vertically. Development might spread as far as the eye could see, at low heights, in all directions. A condition representing a less intense use of land than that currently

present in our city core areas, but a much greater overall consumption of land to produce built environments.

The concentrative effect of the elevator and structural steel also impacted the financial character of our cities. Vertical expansion led to increasing property values in recognition of the greater economic investment in the property. The legal control mechanisms used to guide development in our built environments exhibit a sensitivity to man's technological advancements by addressing building height, set back and other aspects related to city building. The current emphasis on solar rights is not really all that different from its predecessor, air rights.

The threshold crossed with the introduction of the elevator and structural steel in the early part of this century is reminiscent of another similar threshold crossed during the 1950's: the jump from telephone and adding machine to satellite and computer. A transition that will be discussed shortly.

Since the latter part of the Nineteenth Century, we have been living in the age of the machine scale city. This dominant mode in the art of city building despite certain economic efficiencies inherent in it, has served to make the man-environment encounters in our built environments

more man-object or man-machine encounters rather than the holistic relationship based on Buber's concept of the encounter.

Telecommunications: The Earth as City

The work of Marshall McLuhan on telecommunications served as a keynote of the 1960's. The concept of a global village is no longer new. However, examining the global village relative to impacts on man-environment relationships is a new twist. McLuhan's work provides an excellent basis from which to address the impact of telecommunications on man-environment relationships.

Thanks to telecommunications, man is much more aware of the finite character of the earth's ecosystem. We have the capacity to be instantly aware of events within the environment of the earth, whatever their distance from us. The effect of such a capability has not been greatly examined. One cannot help but wonder how many of the environmental problems "discovered" since the 1950's would have been similarly discovered earlier if the telecommunications revolution had taken place, say, in 1900? In what may very well be a "chicken or the egg" situation, we have yet to decipher whether the advances in telecommunications enabled us to become more aware of environmental events, or if we are actually altering the environment at a quantitatively faster pace then ever before.

The philosophical implications of the answer to that issue are tremendous, especially in terms of environmental policy development. If, on one hand, human impact on the environment has been relatively constant throughout history, the pejorative attitude toward Western science may not be justified. However, if human impact on the environment has increased in sheer quantitative aspects during this century, advocacy of limited growth concepts is certainly well justified.

If we can support a questioning of technology as the solution for technologically induced problems due to an increase in human impact on the environment, the case for a conservative approach to man-environment issues will gain stature. In the growth/no-growth controversy, the stakes are high. If decisions regarding development are made under the assumption that technical problems can be remedied by the development of new and "better" technology, the position of Western science, as a pretigious body of knowledge will be endorsed -- but not without serious consequence.

Given a constant human impact on the environment, and an absolution to technology for our current state of affairs, it appears that mankind has not become more adept at preventing or resolving environmental problems but has

merely succeeded in creating more complex and frustrating problems requiring equally complex resolutions. The original and most important issue is pushed aside -- the interdependence of man and environment -- by the "Messiah" in the guise of technology.

Putting aside the chicken and egg aspect of environmental problems, mankind is better equipped today to identify and isolate environmental problems than ever before. Whether we choose to take actions resolving those problems is another matter. In that sense, it is doubtful that we have gained any ground vis-a-vis prior environmental mistakes in the quest for a harmonious relationship with the earth. We have, rather, kept pace with our self-induced environmental problems which is more of an indictment than a statement of praise.

> We are here to face with the crucial paradox of knowledge. Year by year we devise more precise instruments with which to observe nature with more fineness. And when we look at the observations, we are discomfitted to see that they are still fuzzy, and we feel that they are as uncertain as ever. We seem to be running after a goal which lurches away from us to infinity every time we come within sight of it. (10)

Television, radio, and telephone are the modern cultural umbilical cords supplying us with the food of the twentieth century: information. The process is

efficient, fast, and accurate. But our knowledge is still second hand, not an actual experience but a drinking in of information supplied to us about this or that subject. The realities of life keep us from gaining first hand experiences of most of what happens in the world. In that sense, telecommunications expands the human capacity to become aware of events. But this expansion gives rise to a new issue: the reality or validity of the information supplied to us in light of the fact that it seldom represents an experience in our life.

Does the content supplied by our telecommunications systems ever become as real as the events of our lives experienced first hand? Without a doubt, we attach meaning to the information we receive but is this meaning as strong or as vivid as the activities of our daily lives? Probably not.

Our telecommunications systems help us to develop an awareness of the finite character of the earth's ecosystem. But the second hand character of the information we use to develop that concept may be the reason that we are reluctant to take action in the face of evidence demanding our response. Until the direct link between self and earth is explicated and understood by the population of this country, and of the earth, our knowledge of the finite ecosystem within

which we live will remain incomplete and inaccurate. Self and earth, like Yin and Yang are inextricably linked in a web of life. "If man and nature are considered to be related as parts of an organic system, independent definitions are not feasible." (11)

It is not likely that our telecommunications system can be altered to remove the second hand character of the information it supplies. What we can alter is how each of us interprets and understands the information we receive. The educational process holds hope for bringing about such a change in us.

Summary

As was discussed in Chapter One, the gradual transformation of the environment from spirit to matter resulted in a decreasing emphasis on the spiritually nourishing role of the environment. The discussion in this chapter pointed out the further transformation of the environment from object to machine. Our encounter with the environment has become, all too often, an encounter with a machine. The environment-as-spirit position has been all but done away with, and the once direct human encounter with that spirit is all but gone. We now view direct human contact with the environment-as-spirit as the deviation in our man-environment relationships, rather than as the norm.

We are surrounded by machines, events, and habitual behaviors that reinforce our belief in the environment not having a role relative to nourishing the spirit of man. The mechanical world and the world of the human spirit operate according to different principles and rules, accounting for some of our current discomfort as we try to live successfully in both worlds, more often by denying the needs of our spirit rather than by modifying the world of the machine.

We cannot deny the benefits of the machine but that is not to say that it brings only good things into human life. We have allowed the machine to devalue our encounters with the earth, keeping us a long way away from acknowledging the direct link between self and earth. Any models of man-environment interaction developed without consideration of the yin and yang of man and earth will remain incomplete and inaccurate.

Telecommunications has brought us within an instant of one another but has not helped us to forge the link between self and earth that underscores the inter-dependent nature of life on earth. Some philosophical questions remain unanswered and, in terms of the development of a sense of the earth, this may prove to be troublesome. While a general repudiation of Western science is not justified, a close scrutiny of the values underlying that human activity certainly is.

Overall, the prognosis is good. We have uncovered traits of the machine in man-environment relationships, where they have been inappropriately applied. Our awareness of the problems associated with approaching the earth as an object shows signs of growing. And, we have the capability of monitoring the state of the earth's ecosystem. In all, a situation giving us the option of a future not ruled by machines and technology but one providing nourishment for man's spirit.

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Chapter Three: Cultural, Linguistic, and Perceptual Influences on Man-Environment Relationships

Introduction

We live in a world that, for each of us has the appearance and substance of being singularly and undeniably real. The fact of the matter is somewhat more complex. We each perceive the world very differently from our neighbors. Obviously, there is enough overlap to allow for safe and easy daily lives. Yet, we each single out different aspects of reality and attach more or less meaning to them based on our past experiences and current situation within the world. Our culture and language also influence our perceptions of the world. Overall, our selective perception and cultural and linguistic patterns serve to reinforce our particular notions of the world.

Our perception of the world influences our behavior within it, as does our culture and language. In human life, "... things, places and persons are given a social definition which includes perscriptive and proscriptive actions." (1) Only when discomfort or pain enters the picture do we begin the process of altering our perceptions of the world and our actions within it. Therein lies one major difficulty in man-environment relationships: the human tendency to react rather than to institute preventive measures.

The establishment of preventive actions intended to reduce negative consequences of other human actions is as much a matter influenced by language as it is one of perception and culture. "Every language and well-knit technical sublanguage incorporates certain points of view and certain patterned resistance to widely divergent points of view." (2) As long as our language continues to remind us of certain cultural values, our actions will be guided by those values. Truly, what we speak reveals not only our hopes and dreams but also the values and rules we use to guide our individual and collective lives.

Achieving a goal such as environmental quality requires that we understand and recognize the degree to which perceptions, culture, and language influence our relationships with the environment. All three aspects of human life just cited serve to enrich human life when at their best, and to debase human life when at their worst.

If we investigate the impact on our relationships with the environment stemming from our perceptions, culture, and language we may become aware of the richness possible in those relationships as well as of the breadth and depth of life on earth, expanding upon our recognition of human life as the predominant form of life on earth.

Cultural Influences

Our approach to life -- to our actions and abstractions -- is guided by our world-view. Indeed, our openness and receptivity to what others know as fact depends, in large part, on our world-view. "Men can know a thing and yet know it quite ineffectively if it contradicts the general traditions and habits in which they live." (3)

We approach the environment with cultural biases resulting in perceptions of the world that are not facts in an objective sense. Perception of "... the environment for a human being, is in large measure structurized and construed by him." (4)

Our ability to believe in something and to deem it possible is directly related to our world-view. "What is possible is determined partly by what we think is possible." (5) That is not to say if we merely believe, we will achieve a given goal. But the statement does point out a fundamental truth about the concept of the possible in motivating human actions to achieve a goal. Clearly, mental images and concepts must precede physical achievement.

Our concepts of the possible serve not only to open up new avenues for human development but also to inspire and encourage our pursuit of our goals. If we do not lay a

sufficient basis for the possibility of a particular goal, we are not likely to encounter success in its achievement. The form and content of what we believe to be possible is largely inscribed by our particular cultural milieu.

On the scale of the earth, the ultimate level of man-environment relationships, this principle holds true. As stated by H. G. Wells, "I do not believe that a world order can come into existence without a preliminary mental cosmopolis." (6) Although Wells was addressing governmental and social world order, the same type of global consensus required to achieve those ends will be required to achieve global environmental quality. We would be better off not to underestimate the difficulty of achieving such a consensus. To err on the side of conservativism and have more than enough energy to meet that task would be more desirable than falling short of our goal.

Linguistic Influences

Like our world-views, our linguistic approach to identification and understanding of problems shapes our responses and solutions. "It is the mode of handling problems, rather than what they are about that assigns them to an age." (7) If correct, this statement means that we are definitely living in the age of technical/economic man. "The way a question is asked limits and disposes the ways in which any answer to it -- right or wrong -- may be given." (8)

If we ask our man-environment questions with a technical/economic bent, the technical/economic solutions we develop in answer to them should not surpise us. Our solutions may not be "wrong" but they may be based in assumptions that are inappropriate or irrelevant.

What we ask, when we choose to ask it, and how we ask our environmental questions are aspects deeply rooted in our words. "Language is not an inventory of nature, but a creative symbolic organization, defining experience and expectation." (9) We use language to dissect and partition reality. "Each language performs this chopping up of the continuous spread and flow of existence in a different way." (10) Our language "assists" us in selecting from the universe of environmental issues, those which we believe have relevance for our lives as reflected in and reinforced by our language.

Language enables us to control the environment and connect thought and speech with action. (11) In view of the control language provides for us over the environment, conscious thought given to our choice of words and the time in which we use them seems appropriate.

Going beyond linguistic influences on us, philosophers have explored the effects of our consciousness on our

condition. "Steiner believed that the human self-conscious has become progressively acute, detaching people first from each other and then by degrees from individuals, from each other, and even from words and thought." (12) If Steiner's thesis is correct, we may be facing the task of reintegrating ourselves with the natural world, our words and thoughts, and with the others sharing the earth with us. Our detachment from nature, thoughts, words, and others does not lessen the effect of our words and thoughts on us. To the contrary, our detachment intensifies their effects increasingly complicating our lives.

Perceptual Influences

Our sensory system is our primary mode for connection with the world and the others within it. This system, as an extension of our consciousness, helps us to know that we are distinct from the environment, a separate element within it. Again, we encounter an inherent bias in human nature: our sensory system not only connects us with the world but also underscores our separateness from it.

As an upright creature, our body orients us in space. "The six cardinal directions are not endowed with equivalent meaning for us: up and down, left and right, have particular values because we happen to be a special kind of bilaterally symmetrical terrestrial animal." (13)

Further complicating the situation is the fact that we may feel that "... our personal consciousness is the external world, that we are aware of everything that exists 'out there'. But obviously we are not this aware, even at the grossest physical level, since our very physiological receptors are evolved to discard information." (14) We posit our concept of the world as an objective state despite the biases inherent in the forms of our bodies and the functions of our sensory system. Our assumptions inherent in attributing validity to "our world" are numerous and not based in objective fact.

Clearly, perception is not the value-free process we might take it to be. For the sake of survival, we cannot continually question our perceptions to check for the intrusion of our inherent biases. Our very personal way of knowing the world often leads us to applying the imprimatur of objectivity to our perceptions. But this objectivity is actually composed more of human emotions rather than cold, dry facts. When we perceive emotionally, we are not merely altering our perceptions but we are actually approaching the world in a very specific and distinct manner. "Yearning, desire and other emotional states do not merely color perception, they are a way of perceiving and they are also incipient actions." (15) Our emotional mode of perception is equally as valid as our rational-logical mode and the

other modes we use in life. Recognizing this validity has become quite difficult in a Western world dominated by a rigorous scientific method.

Perception as Synthesis

We see with our eyes and the other physical apparatus of vision, not through them. "There is no image on the retina which we 'see'. Our visual experience (even at the most basic level) is a constructive synthesis based on past experience, expectation, filtering and tuning. The eye itself is not a camera, but a selective information gatherer." (16) This fact is significant not only for man-environment relationships but for all forms of human social organization.

We constantly form our image of the world from moment to moment in a manner that leads to a sense of continuity in our consciousness. We perceive elements within their context and take meaning from that context. As we move through the world, we retain a smoothly flowing image of the world as well as a continually changing sense of place. Our sensory system serves us well in that regard.

Our perceptions are also influenced by expectations of what is going to appear before us. "Moreover, these expectations about what comes next are continuously changing

as the signal processing proceeds. We call the construction and revision of expectations during the interpretation of a message an active synthesizing process." (17) We are conscious of the result of the synthesis, but not of the discrete elements composing it. We discard the irrelevant information once the whole image has been formed.

We respond to newness, intensity, speed, and contrast as they relate to changes around us. (18) The periodic alteration of consumer products, such as the automobile and fashions, illustrates our response to changes in the environment around us. We want to pour over the "new" and take in each of its features; to drink the unfamiliar sensations and images that delight our senses.

The peril in this attraction is two-fold:

1) We tend to pay less attention to the "old" simply because we find it less enchanting,

2) our fondness for the "new" has few, if any qualitative bases, other than curiosity and familiarity, neither of which address the consequences of our attraction.

Commitment and Action

The bridge between thought and action is decision: the point of marshalling the human will in pursuit of a goal. In our complex world, it is not unusual for thoughts and actions to be occassionally at variance with each other.

An extreme example of this condition can be found in experiments with the corpus callosum, the organ connecting the two hemispheres of the human brain. (19) When the corpus callosum is severed and the two hemispheres are independent of one another, their specialized functions operate independently and not in tandem as is usually the case. Experimenters devised situations where a subject was exposed to a particular stimulus, sometimes verbal and sometimes visual and asked for a response. In one instance, the subject was asked if he could see the visual stimulus. His response illustrates the potential for incongruence between speech and actions: he nodded his head "no" but verbally replied "yes" to the experimenters. This illustrates the potential for incongruence between speech and action, when taken to an extreme situation. But the lesson remains valuable for the environmental professions: we do not always act in a manner supportive of our verbal statements. Our best means of minimizing contradiction between our speech and action lies in a conscious awareness of our thoughts, speech, and action in contrast to our rather unconscious or unintentional patterns of speech and action in life.

Our verbalizations enable us to grasp and assert "control" over time by ordering it into categories of past, present, and future. Our actions have a similar but less

readily visible function. "Behaviors are present events converging pasts into futures." (20) With thought and action, we synthesize past and present to shape the future. The process is continuous and almost defies the naming and dissection process so loved by Western culture.

If knowledge fails to elicit commitment and action, it becomes sterile and incapable of stimulating change. If our words suggest concern for matters of man and environment, the final evaluation of our commitment must rest on the actions we take.

Isolation of the Self

We live in a world of polarities not only of speech and action but of man and nature, self and world, of either "A" or "B".

> It has taken 4,000 years of struggle to 'lift' man 'above' nature. In the course of that struggle language and thought and behavior in the West have lapsed into a too simple framework of discontinuity and opposition: Spirit and body; mind and matter; earth and heaven; man and nature; good and evil. It is not an insoluble dilemma but it is far more dangerous than we permit ourselves to know. (21)

Man lives separated from the natural world that gave rise to his life. His skin encases his body and serves as an interface with the environment -- with everything

external to his body. This encasing of our bodies by our skins leads to a feeling of encapsulation -- of an end to our bodies and of a beginning of the environment. One can even feel separated from one's body as the locus of thought seems to hover above the head. "The constant sight of our noses assures us that we are not disembodied observers." (22)

"One's own body seems to have an otherness which threatens to fracture experience into three parts: the environment, our body, and our self." (23) This tripartite division of existence is made possible by the original polarization of existence into self and non-self resulting in an approach to the environment as if it were totally external to and independent of our existence. (24) This approach is aided by the acuity of our perceptual organs which enable us to know the world in a highly defined manner. We do need a certain level of distinction between self and world in order to function successfully in the environment, but when over done, our functioning may be impaired.

We seldom attain conscious awareness of our separation from the world; it blends into the overall experience we call life. Becoming aware of the inter-connectedness of all life is the first step toward the development of values, life-styles, and behaviors

compatible with the web of life. In the words of A. E. Parr, "Somewhere along the line, in recent times a critical mass was reached when the man-made city became the environment of its citizens instead of a temporary retreat from the natural surroundings." (25) Reversing that process to achieve integration of man and earth will not come about as accidentally as did the initial schism between the two.

To achieve reintegration will require that we act with conscious awareness and intent in seeking to reestablish the singularity of life on earth. The full force of the human will must be present to develop intentional behaviors that make clear and reinforce the concept that life on earth is an interconnected and purposeful network.

The Role of Integration of Man and Earth

Despite the interdependent character of life on earth, man remains separated from the others with whom he shares the earth. In a world of objects, other human beings in the environment tend to become objects as we quantify them, stereotype them and ignore their individuality. "We ourselves seem to be objects, and we think using a language that defines and creates relationships between objects." (26) The spirit of man and the life within him is cast aside when he is approached as an object. "The relation of man to man is only an expression of the relation in which he stands to

all beings and to the world in general." (27) Our approach to others reveals more about our values than we might care to acknowledge.

In our era the human ego represents the primary mode of knowing the world, and the primary benchmark for measuring success. Progress, achievement, and satisfaction have all taken specialized meanings relative to the ego. We no longer are required to wait unless we choose to do so when meeting our needs. The mood of "me-first" sweeping this country, if a portent of things to come, signifies new problems for man-environment relationships and the isolation of the self from the earth. But if this inordinate emphasis of the human ego represents the top of the pendulum swing to that position we are likely to witness, and be a part of a much needed diminishment of the emphasis of the ego and its needs as the measure of the quality of life. Hopefully, we have not forgotten some basic points of the Freudian system that "gave" us the ego: that the integration and smooth operation of the self is based on a balancing of id, ego and super ego, not on an overemphasis of any one component.

Modes of Consciousness: Robert Ornstein

The term "ego" represents one mode of encountering the world, one mode of consciousness. Human consciousness tends to elude observation when it is our own consciousness we seek to observe. We know the world by virtue of our mode of consciousness which structures the images we use in daily life.

Much of Ornstein's work focuses on the fact that man's brain consists of two hemispheres, each having specialized functions. The left hemisphere deals with matters of rational-logical origin while the right hemisphere tends ot address intuitive-holistic matters. (28)

Our Western mode of consciousness favors the left hemisphere but we are not without the capacity to more fully develop the right hemisphere and its functions. The left hemisphere has been overemphasized in the past 200 years in the West but we do have the means of resurrecting appositional, non-linear, intuitive approaches to life, if we choose to do so.

Ornstein also addresses the role of esoteric psychologies. Many of these psychologies have not received attention and wide-spread publication as have their more traditional conterparts. They are often perceived as tainted by elements of quackery or fanaticism. To the contrary, these psychologies have a rich content applicable to man-environment relationships. "The concept of the environment in these esoteric psychologies is also much more inclusive than the Western one. It includes the importance of subtle geophysical forces such as the rhythmic changes which daily occur on Earth, the light-dark cycle, internal and external biological rhythms, and the effects of certain microclimactic conditions, such as the ionization of the air. These forces

have not, until quite recently been included within the Western scientific worldview." (29)

Scientific discoveries pointing to an extended concept of the environment also point to an extended concept of man. As we begin to realize that the environment includes forces and substances not always readily apparent, we approach the concept of the environment embracing more than the simple material and physical components easily available to our sensory system.

Whether we acknowledge their existence and effects, we are impacted by elements of our environment of which we have a low conscious awareness. Cycles and forces having a low rate of change or manifested on a scale far in excess of the capacity of our sensory system do exist but are difficult to "find" because they fall outside the realm of the readily observable. Recent work of circadian rhythms points to human response to subtle, unseen forces. (30)

If we can accept the fact that our world view and concept of man are one of many, we can begin the liberating process of redefining man, constructing new world views and in view of Suzanne Langer, approaching our problems anew mindful of the effects of our language and approach on our solutions. Avoiding the rut and habit of our Western mode of consciousness will not be easy. One of the ways we can

rid ourselves of those comfortable mental habits is, as termed by Arthur Deikman, the process of deautomatization.

Deikman and Deautomatization

For the better part of each day, we go from activity to activity as if we were operating automatically, without consciousness of the events that make up our day. Arthur Deikman, in his work on this automated aspect of our consciousness has suggested that we could benefit from deautomatization: a removal of the automatic actions, signs, and guideposts cuing our behavior infusing us with a conscious awareness of our actions within the world.

We operate "on automatic" because of the nature of our sensory system. We respond to stimuli in our environment with constancies becoming the background for change. Constant elements are so much a part of our visual array that they tend to lose their presence in our perceptions. Despite this, we continue to rely on their existence and to believe that they will function in a particular manner based on prior experience with them.

From our array of experiences we distill a series of "rules" that operate successfully a majority of the time in which we apply them. These generalized rules assist us in operating on automatic. Since the rules are derived

from constancies in our environment (whether they be things, actions or people) their presence fades as actions predicated upon them become habitual. The original intent behind adoption of a particular behavior is most likely a conscious intent. "But action originally prompted by conscious intelligence may grow so automatic by dint of habit as to be apparently unconsciously performed." (31) Actions that have become habits may become invisible elements of our behavior. (32) The values underlying the initial adoption of the habit also become less apparent as the particular action becomes a permanent feature of our behavior.

The price assessed by our automatic behavior is high but reliance on it has a basis in our survival. If we remained consciously aware of every action and moment of our lives, the sensory display would be quite dense and chaotic. "The automatization of ordinary consciousness is a trade-off: for the sake of survival we lose much of the richness of experience." (33) If habitual actions were eliminated from our lives, life would become burdensome and even walking could become characterized by a complex decision making process.

Obviously, our choice is not simply either habituated perception or total conscious awareness, but a combination of the best elements of each. Deikman suggests that

deautomatization will lead to an expanded awareness of ourselves and the world in which we live. In this regard, we have the company of George Gurdjieff, Rudolf Steiner, and other esoteric philosophers.

Our awareness of existence is developed through a path of present-centeredness. Man tends to be perpetually drawn to the "now" despite the lessons of history or his concerns for the future. The greatest possibility arising from our present-centered mode of consciousness is precisely what is usually defined as its greatest liability; the dominance of the present over the past and future in our thinking and decision making.

Although we are likely to remain present-centered creatures, we can extend our awareness in the past and potential consequences in the future.

The future is not, like our notion of the world, somewhere "out there". The future comes upon us incrementally with the passage of each successive moment. The future is certainly five, ten, and one-hundred seconds, minutes and days away. Lumping all futures under one heading does little more than make the future appear to occur later than it actually does. Put more strongly, to give the future an appearance that it never happens and remains only a potentiality.

Breaking our habituated perceptions and behaviors will require conscious awareness of the present and our decisions within it as key elements in the process of shaping the future. Achieving deautomatization should be based on an expanded awareness of time leading to a fuller realization of the manner in which decisions in the present give form and substance to the future.

Our limited concepts and awareness of time tends to promote weak and fragmented policies used to guide development of our environments and human life within them.

Fragmented Policy-Making

We approach man-environment issues on short-term bases: a fragmentation of the actual time span involved, a distortion of the temporal character of those problems. We also approach man-environment issues from a variety of provincial points of view rather than from a global perspective more appropriately mirroring the nature of those issues.

Our system of government divides up the natural environment into political jurisdictions which tend to have little functional correspondence to events occurring within it. There is, of course, a correspondence between political jurisdictions and their electorates but neither of these parties can prevent the flooding of a river, control the

path of a tornado, or direct the flow of pollutants through the atmosphere. Our conceptual and administrative approaches utilize segmentation techniques for ease of handling the otherwise "unwilling" environment. The cost of this approach mounts daily with each environmental disturbance occurring across jurisdictional boundaries thus representing a challenge to coordinated, effective, multi-jurisdictional responses. If we continue to make a fragmented approach to the environment, do we have the right to expect more than fragmented success?

Perhaps Jonathan Barnett writing in Urban Design as Public Policy sums up this situation best relative to our built environments. "Today's city is not an accident. Its form is usually unintentional but it is not accidental. It is the product of decisions made for single, separate purposes whose interrelationships and side effects have not been fully construed." (34) Fragmentation breeds unexpected, if not undesired, results both in our built environments (time fragmentation) as well as in our relationships with the earth (ecosystem fragmentation).

Perhaps we are unwilling to acknowledge our responsibility for our built environments and the earth because so much evidence of our irresponsibility flows through our sensory system. The enormity of our

responsibilities may frighten us from taking action. And, to retain our sanity, we "deny" either the evidence before us or that we have any role in bringing about solutions for the problems.

Man has a tendency to shy away from long-term thinking and planning. The most likely reason for this relates to our perception of time. Unless certain basic human needs are met, our attention will not be easily turned toward abstract and future oriented issues like environmental quality and urban planning.

We may feel capable of using reason to balance our short term orientation but this is not apt to be enough. "Reason is a tool, and tool that is wielded in the service of assumptions, beliefs, and needs which are not themselves subject to reason." (35) Our emotions play a role in decision making that has been too often denied in this century, especially in the Western world. We cannot wish or reason away our short term orientation. We are faced with the need to focus our will on bringing our concern for the future into our present-centered decision making. Accomplishing this integration will require continued mindfulness of our goal to fight against a short term orientation to changing our short term orientation.

Man's short term focus in his thoughts and actions makes for more crises in our lives, situations requiring immediate response under stress-filled situations rather than planned actions developed in full view of the immanence of the future but without the stress of taking immediate action.

Crises and Planning

When confronted with a crisis, especially an environmental crisis, there is a period of time in which we can generate a response before the situation is totally beyond our control. If our response takes place after the situation is out of control, we can expect to have little success. Briefly, the essence of crisis resolution is generating an effective response in the available time.

As we pass threshold after threshold of environmental complexity, our response time decreases to an almost absured level. We have identified the existence of carcinogens in the environment, whose effects will not be known until an entire generation has been exposed to them. A waiting period of 25-30 years, perhaps with no time available at the end of that period for our response and solution. (36) In theory, our response time may diminish until it does not exist in a quantity sufficient to provide us with an opportunity to intervene. This prospect is one of the

strongest justifications for preventive environmental research. We cannot afford to "wait and see" what happens when the stakes include the quality of human life. "The size and complexity of large systems tend to outgrow any level once regarded as their upper limits, our ability to control and direct them is not growing but deteriorating and showing itself to be more and more inadequate." (37)

The West has been prone to the use of technology to solve technologically induced problems. Our approach to achieving environmental quality has "... been the traditional one applied to major social issues in North America -- the quick administrative, financial and technological fix." (38) Whether Sewell intended it or not, his choice of the word "fix" is quite appropriate considering its drug related meaning. We have been on a technological "high" for the better part of this century. The dysfunctions now present in our political and social systems are evidence of the "withdrawal" pains due to the partial removal of technological solutions for technologically induced problems. Still, in recent years, criticism of technology has produced more technology in response as opposed to other types of solutions and responses.

If our man-environment issues continue to be framed as responses to crises, we are likely to engender

more crises in a self-perpetuating cycle. Approaching our man-environment issues as crises leads us to believe that solutions can be found in one-shot applications of technology or in temporary behavioral changes. Being mislead in this fashion will not help us to grasp the sacrifice needed to achieve environmental quality and to live in a manner compatible with the earth cooperating with other life forms sharing our ecosystem. Major, permanent changes in values and lifesytyles are not likely to be our responses to crisis situations. Responding to a crisis places us in a position of reacting rather than acting. Planning is next to impossible under a framework of reaction rather than action. Planning, with its major goal of shaping the future, should serve to keep the greatest number of options available to us in our man-environment relationships thereby decreasing the frequency of crises and crisis-like situations and their attendant stresses. But, if we cannot become successful enough to reduce stress in our lives, we should become aware of its existence and effects on us.

Stress and Adaptation

As organisms in an environment, we are subject to stress. The growth of our built environments, the mechanization of our lives, and the densification of our cities have all combined to produce more potentially stressful situations for man. The human organism is adaptable and

capable of surviving some of the stress it encounters. Our ability to adapt does, however, obscure the particular stress involved. If we successfully compensate for the stress, it "ceases to exist" to our perception.

Adaptation involves physiological or psychological changes (that may not be observable) in response to a stimulus. Our society has a tendency to assess costs and consequences as those being readily and immediately observable given the initial event. We are now beginning to realize that other costs also exist and may be difficult to define or only become apparent long after the initial event producing them has disappeared from the scene.

Adaptation can be considered as any change taking place in an organism as a result of an internal or external stimulus. [39] The net effect of stress is that a previously established equilibrium either within the organism or between the organism and the environment is upset. We may adapt passively or actively depending upon whether or not we recognize the existence of the stress and its effects on us. A period of continual exposure to a particular stress may lead to a habitual adaptation reaction and to a decreasing awareness of the existence of the stress. Awareness of a stress depends on perception of its effects.

We are unlikely to take actions to resolve a stress if we are minimally aware of its existence. Our ability to adapt works in direct opposition to our awareness of stress so that education to enable people to identify stress in their lives becomes important. Glass and Singer in "Urban Stress: Experiments on Noise and Social Stress" suggest that an index of adaptation should be developed to measure decreasing sensitivity arising from continued incidence of stress. (40) This index could very well become a quality-of-life indicator and help humanize the machine-scale city. One of the stresses present in our modern city is noise, an under-studied environmental stress.

Noise as an Environmental Stress

Noise is distinct from sound, although all noise is sound, not all sound is noise. "In general, sound is noise when its physical components disturb the relationship between man and his fellow man and his environment. Or when the acoustic energy causes undue stress and actual physiological damage." (41) "Sound consists of pressure variation. When an object 'makes a sound' it causes pressure waves to propagate out through the surrounding medium." (42) We seldom think of sound as pressure waves. Our daily lives depend on the successful functioning of our sensory system to the extent that the content of our sensory perceptions dominates the process involved. The fact that our auditory

system functions in response to pressure waves is lost in the process of hearing.

Amplification of sound means changing the pressure waves. Sound, when it becomes noise, can impact the soft tissues of the human body spreading out the pressure against the surface and substance of those tissues.

Some objects reflect sound adding to it and providing additional aural stimuli. The modernization of life and the congestion and densification apparent in our cities have increased the amount of sound and noise around us. When sound becomes predominantly noise, the content becomes garbled. The mechanization of our lifestyle has produced sounds, mostly noises, that would not have otherwise been produced were it not for mass use of machines. Unfortunately, we now seem to consider these noises as natural to the environment. (43) Confusion over when sounds and noises belong to our environments does not seem to heighten our awareness of noise as a stressor. Acceptance of mechanically produced noise as natural to the environment (even the built environment) does not halt its psychological and physiological effects. We merely limit our awareness of the noise.

To some extent, we are unaware of noise around us because of the filtering and screening parts of human

perception. We screen for sounds (including noise) with meaning from moment to moment as our location within the environment changes. What is meaningful at one time may be superfluous at another. We do, at times, retain a noise message because of its relevance. When a room becomes too noisy to easily carry on a conversation, we become aware of it impeding speech at a normal voice level. We can become so adept at screening out noise that we also screen out messages with meaning. "Kindergarten children attending a school near New York's Centrl Park were taken for a walk, and then asked to list the outdoor sounds they heard. The majority of the sounds they named were noises, mostly from transportation. There were few mentions of quiet sounds like birds and human voices. Transportation noises are becoming more 'natural' to these youngsters than the sounds of nature." (44)

Too efficient screening of noise and confusion of mechanical noise with sounds of the natural environment has turned up in the classroom in the inattentiveness of students. "Apparently, in the act of screening out the destructive sounds of their environment, they (the students) have lost the art of focusing on speech sounds." (45)

That we have become capable of habitually screening out human speech sounds in favor of other sounds and noises

is not a comforting thought. The issue is not the act of screening but the habitual and automatic screening out of human speech sounds in favor of other sounds and noises in our environment.

Noise does not "go in one ear and out the other". In addition to the initial psychological and physiological responses to noise, there are secondary responses. "One does not get used to noise. Somewhere in the human body that sound is being absorbed -- at an as yet unknown price." (46) While educating ourselves about the effects of noise, we will continue to suffer the costs we are seeking to identify via our education efforts. We may discover that noises once tolerated are all too numerous and annoying once a wider recognition of noise as a stress is developed. Our tradition of passive acceptance of industrial sonic wastes may be altered into an aggressive posture in defense of a right to an aural environment not polluted with noise. (47) If we become too aggressive and miss the middle path on the issue of noise, educative work may become worthless if viewed as the efforts of environmental radicals rather than as the work of concerned human beings. Whether the stimulus be aural, visual, tactile, or olfactory, the relevant content becomes a part of the overall image of our environment, of our cognitive map of the environment.

Cognitive Mapping: How We Find Our Way

As sensory signals proceed upward through that system, the amount of data is progressively reduced. (48) The screening, filtering, and tuning process reduces the original input to a condensed version of relevant information tempered by past experiences. We tend to create order in our environments based on sensory data which, if we are able to successfully negotiate our environments, helps promote a sense of security and well-being within us. We receive sensory signals that indicate our location within the environment. Along with these signals is a certain amount of noise which can distract us from achieving satisfactory orientation within the environment. Exposure to sensory inputs having no meaning results in their being screened and the signals with relevance being retained. (49) The quality of the retained messages establishes the quality of our cognitive maps. If we receive too much noise or false information, our cognitive maps may not be accurate or useful to us. (50) Behaviors based on inaccurate or incomplete information may be deficient in terms of successfully negotiating our environments. Hopefully, if that happens, the education and consciousness raising activities proposed in this thesis will help us develop more appropriate, fuller and richer cognitive maps promoting a more successful relationship with our environment.

Summary

If planning does not provide a vision of the future, or of possible futures, our day-to-day decisions and choices will have no focus. (51) If planning does not assist us in defining "the possible" it will miss one of the best products it can provide to man. Our choices are limited enough without further restraint arising from the crisis syndrome that our society seems quite fond of utilizing. With each day and year, the complexity of world affairs multiplies. (52) In one sense, we really seldom have the opportunity to make a true choice or decision because our options are limited technically, economically, and politically in addition to biological and cultural limitations. "The social normative character of the environment therefore tends to set limits to the malleability of that environment for any individual engaged in action." (53)

We acquire knowledge through experience, especially those of our childhood years when we build our base of experiences from scratch. These experiences do have long term effects. (54) We distill from them relevant generalizations used to direct our decisions and behaviors within the world. Acceptance of our personal "explanation" of the world, as the world, complicates our decision making and valuation processes. Our sensory channels are supportive of our survival but, at times, make that survival more difficult.

Our built environments cover more of the earth's surface than ever before and their densities are unprecedented in human history thereby exposing us to more stress than our ancestors were similarly subjected to in their day. (55) The universe of sensory material presented to us contains many sounds, odors, noises, and images developed within the last 150 years through our technological capacities. We appear to be faced with a continuation of this over-stimulation until sufficient economic incentives prevent it. (56) And until then, the planning and design professions do not appear likely to increase their interest in plans and designs more compatible with human sensory needs. (57)

Being human means choosing; continually selecting one thing or another from the multitude of things around us. Choosing is the act that shapes our future on an incremental basis, almost imperceptibly. Our daily choices shape other choices available to us the next day, month, and year. With each successive decision we are faced with "different branches" of our path in life. If we select options having a high degree of exclusivity relative to other available options, we run the risk of closing doors to the options not selected, perhaps permanently. The current debate over increased use of nuclear power as an energy source in this country is a good example of such a situation regarding exclusive options. If nuclear power is developed as a

common power source in this country, the capital needed to explore other alternatives may not be available. And, we will be face-to-face with the issue of nuclear waste disposal, already a problem even on its presently small scale.

For the most part, national codes do not exist relative to sensory aspects of design and planning. The pollution of our environment is being joined by a pollution of our sensory channels. The response by business and industry has tended to be actions to reduce consumer complaints rather than actions to reduce the cause of the complaints.

Awareness that we shape our future is quite low. "Alertness to the future, we have to realize, is a novel and artificial thing in life. It has to be constantly refreshed and sustained. Minds must be trained and accustomed to it; it is a matter of social atmosphere much more than individual intelligence. They have to hold up to it by something stronger and more permanent than themselves." (58) Our short term focus continually urges us to pay more attention to the present, to live <u>now</u> rather than to develop a consciousness of the future.

Our social system is large and changes slowly in increments difficult to perceive and therefore, do not

suggest themselves as the changes they really are. Changes at speeds and scales removed from the human scale are difficult to perceive.

We live a great part of our lives in an automatic fashion with little awareness or attention given to the actions and decisions of our daily lives. While we live "automatically", the future continuously becomes the present and recedes as the past. Each time we fail to exert our will to fashion a more suitable future through decision in the present, we lose another chance to improve human life and the quality of the earth's ecosystem.

Deautomatization of our lives can lead to expanded concepts of man, the environment, and a heightened awareness of our direct relationships with the earth, the future, and life styles more compatible with our understanding of how the environment functions.

We cannot afford to allow the subtle processes discussed in this chapter remain mostly unknown to conscious thought. There is an imperative involved: our survival as individuals and as a species rests on the choices we make. "We are not only caretakers of the past; we are also responsible for the construction of tomorrow." (59)

And, returning to a theme of this thesis, the educational process must be utilized for the promise it holds in developing within man an awareness and the perceptual skills to help bring about built environments and planning documents developed with consideration given to human sensory needs.

"The environment envelopes us; it is what the eye sees and the spirit senses." (60) The need to consider our emotional and spiritual responses to the environment must be recognized and made a part of the planning and design professions responsible for the development of our built environments as a step in the process of constructing livable, humane environments addressing the needs of man and the ability of the earth to meet those needs without environmental degradation.

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Chapter Four: The Influence of Economics on Man-Environment Relationships

In addition to the technological influences presented in Chapter Three, man-environment relationships also have economic characteristics. In a broader sense, values and the process of valuation continually manifest themselves in man-environment interactions. The content of this chapter can be summarized as follows:

1) Valuation in a Free Market Economy
2) The Nature of the Common Good in a Free Market
3) The Law as a Control Mechanism in Environmental Affairs of a Free Market

Each foci will serve to heighten awareness of the fact that many of our assumptions about man-environment relationships exist because of economic, legal, and political systems. No indictment of these systems in intended. However, it is important to understand that as decision makers in the environment, we tend to create the situations we find ourselves within. (1) Until we become more precise in our environmental "askings", we are not likely to achieve what we really seek in our man-environment affairs.

Just as an indictment of our economic, legal and political systems is not intended, neither is the support of a wide spread revolution to overthrow these systems. The case about to be made is one for an increasing awareness of the axiological biases inherent in our economic, legal,

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and political systems. Biases that affect, at times adversely, our relationships with the environment.

If our assumptions about a particular situation are accurate, we can be fairly certain that actions predicated on those assumptions will be effective. If, however, our assumptions are inaccurate or irrelevant to that situation, our actions will not be similarly effective. Our ability to predict consequences of our actions decreases proportionately with the decline in the validity of our operating assumptions.

Much of the decision making and operating assumptions in man-environment relationships can be conceived of as taking place on a Cartesian plane with one axis being represented by technology and the other by economy. This coordinate system describes consequences, results, and costs in terms of two values that have dominated valuation in the twentieth century western world. Progress has become defined in terms of technology and economy. Efficiency, that much sought after characteristic of machines has also been sought in the manner in which we design and erect our built environments. The character of our economic system warrants this emphasis on efficiency but not to the extent that it becomes the sole measuring device used in assessing the effect of human activity. Efficiency as the sole measure of things leaves quite a bit to be desired as far as the human spirit

is concerned. Although this chapter addresses the role of economic influence in our man-environment relationships, it also, perhaps more importantly, addresses the role of the human spirit in those relationships. Acknowledging human values that are not eaily quantified should serve to "round out" the Cartesian plane of technology and economy into a three dimensional system: A more accurate means of assessing the costs and benefits associated with a given human endeavor.

Valuation in a Free Market Economy

As defined in the Scribner-Bantam English Dictionary, valuation is the "act of setting a price; appraisal, estimated worth or value." (2) In man-environment relationships, we each attach certain levels of worth -- values -- to various qualities, characteristics, conditions and consequences. Whether we know it or not, our values are implicit in our actions, especially in our environmentally related actions. "Man cannot discuss environmental fitness without introducing judgements of values." (3) Human nature being as complex as it is, we may give verbal support to one value and perform actions in support of an unrelated or opposing value. This is reminiscent of the experiments with the corpus callosum cited in Chapter Three. When we value items that are partially or totally exclusive of one another, we put into use the concept of the tradeoff, essentially a situation where we gain and lose simultaneously, hopefully ending up

with a net positive outcome. In environmental matters, the tradeoff crops up quite a bit as the values of economy and environmentalism meet head-to-head.

Clearly, valuation in a Free Market system has certain effects on man-environment matters that occur within that economy. [4,5] Not the least of these relates to the emphasis on the maximization of one's economic position. In an econmic system where producers, consumers, supply, and demand hold sway, some products will mirror the needs of the people. Producers will either supply those products for which there is a pre-existing need, or supply products for which there is little need and generate the need for them. Manufacturing products for which there is little demand is not, by itself, cost effective.

If one views the environmental movement as the "demand side" and business, industry and government as the "supply side" it is clear that under a Free Market system, demand for environmental quality must reach a level where compliance with that demand is cost effective for the producers. Consumers of environmental quality (all of us) are faced with increasing their demand while adhering to the existing axiological plane of technology and economy or with modifying valuation criteria to include their own values relative to environmental quality along with technology and

economy. In either case, it may not be a matter of quantitatively increasing demand for environmental quality, but of translating the existing demand into one better understood by the production sector. Consumers, if they are not successful in communicating their demands, should seek to use the value system of the producer to express their wants and needs. This would be one means of ensuring that the message sent by those concerned with environmental quality is received in the intended fashion. (6)

Consumers must also recognize their responsibility to make known their needs. If one assumes that a given product is not attainable because it is not presently being supplied, and then proceeds to be silent on the issue, it is unlikely that the product will ever be supplied. The responsibility to make known one's concerns for environmental quality rests equally on all of us, especially on those whose environmental values have reached a level of development where articulate expression is possible.

The supply-demand issue relative to environmental quality can be partially solved by increasing demand for environmental quality either in absolute, quantitative terms or through selection of the form used to express the demand. When suppliers recognize the positive economic benefits to be derived from meeting the demand for environmental quality,

there will exist an incentive for production. Methods to increase the demand for environmental quality are presently in use but not wide spread enough to achieve mass success. Increasing awareness and sensitivity relative to environmental quality is one method of increasing demand for it. Economic pressures in the form of product boycotts or reduced consumption are also tools for expressing the depth of demand for environmental quality.

The Role of Self-Gain

In addition to the supply-demand aspect of a Free Market economy, the concept of maximizing one's economic gain is also prominent. Unchecked, this process has a tendency to exclude the needs of others. Entrepreneurship taken to an extreme on a value plane of technology and economy can be, and has been dangerous.

> Corporate decisions affect the relative prosperity of our nation, the development of foreign nations, submission to resistance to foreign boycott threats, discrimination or non-discrimination against blacks, women, Jews, or other social groups, the future of cities, the quality of urban life, the retirement income of the aged, the development and conservation of energy, the state of the environment, and even the viability of human life itself. There is virtually nothing a corporation does any more than can be considered exclusively "its own business." (7)

When viewed in terms of man-environment relationships and environmental quality, the consequences of unbridled maximization of one's economic position (be it individual or corporate) is clear. As long as we are technologically

and economically capable of taking actions to maximize our economic position, we are likely to do so even if the results include environmental damage. As long as a short term gain can be demonstrated, the decision to undertake the particular activity will likely be made.

Maximizing one's economic position is subject to certain legal and political constraints. Yet, these constraints are not often enough to deter a questionable venture from becoming an actuality. Negative consequences of a short term nature are overlooked in favor of long term economic gains. Consideration of the future, other than in economic terms, is not readily promoted by maximization of one's economic position in the world.

> The environmental crisis demands more restriction and more control over both products and processes. Similarly, government must exercise greater control over the physical impact of the individual as he, too, represents a particular interest, but since the government itself is a special interest group, its activities must be controlled by individuals. (8)

The Role of Special Interest Groups in Promoting Self-Gain

The emphasis on the individual --the self -- has reached a point where the welfare of others receives less consideration than apparently it has at any other time in history. (9) This decline in consideration of "the other", whether it be human of the environment, has become visible

in our political and legal system through the actions of special interest groups each promoting their particular cause. The relevance of special interest groups to the concept of maximizing one's economic position is very direct: Maximizing one's economic position is likely to be accomplished somewhat easier in association with others holding common values then in isolation from them. The special interest group represents a vehicle for those with similar interests to join together in pursuit of common goals.

Beyond this microcosmic level of effect, special interest groups breed more of their kind in an endless cycle. (10) The Free Market seems to favor those groups capable of raising the most dollars for promotion of their causes. Since the groups are on the demand side of the market system, our current economic values require that funds be available to give visible evidence of the demand existing in support of that particular cause. Unless demand is visible, a response from production is not likely.

As special interest groups proliferate, they compete with each other economically and ideologically. Funds for the support of such groups come from essentially a single source: people. As requests for funds multiply, the available dollars reach their upper limit and the competition

for them begins to increase. Eventually, groups no longer able to sustain financial momentum disappear from the scene. When a group loses the appearance of usefulness to its members, contributions will begin to decrease. (11) In this manner, the market regulates its own "children". Not all special interest groups that die, should die. In the case of man-environment relationships, interest groups supportive of environmental quality may have excessive difficulties raising funds. The cause of environmental quality is costly and involves sacrifice on the part of all of us.

Environmental quality, especially when promoted for future generations is a long term, non-economic goal; not the easiest goal to use in fund-raising activites. Evaluated with regard to technology and economy, environmental quality receives a low rating.

Maintaining the political and financial momentum of environmental interest groups is not easy. The proliferation of environmental groups exacerbates competition. Dollars for environmental interest groups will not expand infinitely. The economic system with its emphasis on maximizing one's economic position and its impact of special interest groups works in opposition to the achievement of long-term and non-economic goals. The economics of environmental quality do exist but they are not being fully used. (12)

Maintenance of the environment pays a return on investment that by far outweighs the cost of that investment, a relationship that should receive more publicity and explanation. Efforts to make the terms "environment and future" more relevant to our daily life situations appears to be one means of making clear the environmental and economic consequences that result from inattention to environmental issues. And yet, how do we come to know the environment and the future on a first-hand basis?

The environment ranges in size from the length of an arm's reach to the finite ecosystem of the Earth. At which times do we use the various meanings? The future is not any easier to define or understand. Humans appear to be better able to address the present and the past then the future. Even attention to the present is difficult for man. Short-term tradeoffs are favored by our press for immediate gratification. The future, that for which we must discipline ourselves in the present, looms menacingly like a strict overseer from whom we seek escape. The escape never comes. We meet the future in every moment of the present and with each breath we take. The inescapability of the future must be recognized especially in man-environment relationships. The future generation for whom we pursue environmental quality includes us as members. The future must also be

included in the value plane of technology and economy to broaden that valuation process in our Free Market system.

Special Interests and the Common Good

The historical development of the United States has been characterized by strong roles played by the Free Market system and the Common Good. Perhaps the most interesting progeny of this interaction has been the special interest groups. In what amounts to a cross between a one-man band and a political party, special interest groups have been increasing in number since the early 1960's. Increased activity in the area of individual and group rights has helped stimiulate the growth of special interest groups.

During the major portion of the history of the United States, it was possible to refer to the concept of the Common Good as a means of considering the overall welfare of a group in terms of the sacrifices made by individuals constituting the group. Today, the concept of the Common Good appears to have significantly degenerated into a catch-phrase with little meaning for our society. It is now more appropriate to refer to Common Goods in recognition of the plurality of causes and interests sought by the various subsections of our population. The quality of the environment is one of these common goods. As such, the environment is in competition with the other common goods

including lower taxes, better education opportunities, comprehensive health care and other issues.

A case can be made for the fact that without environmental quality, other issues are of little consequence to human life. However, most of the issues just cited do impact the quality of human life as directly as does environmental quality. A stronger case should be made for the fact that a sound environment can be quite effective in promoting the quality of human life, human health, and well-being. The nature of our economic system is not compatible with establishing the primacy of environmental quality as <u>the basis</u> for improving and ensuring the quality of human life.

> The public has been persuaded all too well by relentless advertising that the quality of one's life is most appropriately defined by the amount of one's material possessions. The American public has been convinced of the importance of not only a chicken in every pot, but also of a detached single-family dwelling, two cars in the garage, a cabin in a pleasant remote, wooded area, meat each night, and a boat. To these private possessions Americans have recently added a variety of social goals: high, continuous employment, adequate medical care, day-care facilities, unlimited educational opportunity, an adequate income for retirement -- "cradle-to-grave security". Not only does the American public increasingly expect these things, but it expects them immediately. (13)

The quality of life, if measured by the coordinate system of technology and economy, comes up short in the area of man-environment relationships. The best that presently

appears possible on the issue of environmental quality (as a particularly important special interest) lies in the redefinition of the Common Good as it applies to man-environment relationships. Recognition of the common need for environmental quality stands as the present best means of securing a consensus across environmental interest groups in pursuit of this goal. Economic concerns are likely to depress any initial success with this approach until matters of environmental quality are converted into appropriate economic terms to permit their introduction into our valuation process. Two other issues key to an understanding of problems associated with the nature of the Common Good as modified by special interest groups are:

1) Environmental Policy Development: Lobbying
2) Specialization of Knowledge: The Problem of Experts

Environmental policy development is subject to the lobbying efforts of many special interest groups. Opponents and proponents of an issue serve a useful purpose when they assist in drawing out specific positive and negative characteristics of an issue. The difficulty associated with the lobbying activity does not flow from the fact that it occurs, but from the fact that lobbying requires strong financial support and, is therefore, not always a process engendering objective analysis.

> No cliche is more basic to the age than the individual is powerless in the face of the huge corporations of the post-industrial state. Our society has convinced us that no cultural movement can succeed without political power behind it, and that political power can only be expressed by the heaping up of units in great masses, dollars or votes. (14)

Briefly, monied interests stand a better chance of being heard via their lobbying efforts than do non-monied interest groups. The influence of our economic system on environmental policy development is clear. If a group has reached a stage of development where financing is not a problem, their lobbying efforts may attain success. This seems to equate the ability to speak out on an issue with an ability to secure financial support. While many extremists are unable to speak out on their particular issues, many others (individuals and groups) are also excluded from the lobbying process due to a lack of financial resources. To establish access to the environmental policy development process as being synonymous with an ability to secure financial support for lobbying activities perpetuates the tradition of monied interests being best able to achieve their goals through the legislative process. Visibility as a means of assessing support for an issue assumes that consumers are equal in their ability to express their needs. As long as the environmental movement remains in a financial position inferior to the position held by elements opposed to achievement of environmental quality, that goal will be difficult to attain.

The Specialization of Knowledge and the Common Good

Turning to the specialization of knowledge and the problems on conflicting opinions about environmental issues, the potential for confusion on the part of elected and appointed decision makers becomes apparent. "Ideological preoccupations prevent people from even suspecting the existence of systemistic problems." (15) Our work and economic systems have fostered specialization and the impossibility of being more than superficially aware of issues and diverse fields. We find ourselves needing to rely on experts and their advice. (16) Such advice is essential to policy development in any field and especially in planning to ensure relevance of the policy to its parent field. Yet, conflicting opinions rendered by experts make the policy development process difficult. The current energy situation in the Western world serves as an excellent example of the confusion that can develop when experts put forth solutions to problems facing us.

The Common Good has become more of a common denominator -- that element able to effect a consensus across otherwise competitive or opposed factions. The common denominator is quite distinct from the Common Good in one major respect. Although people have a common bond, it cannot be inferred that maximization of that element will result in an equal distribution of benefits to all. Once

the goal is achieved and the consensus dissipates, the unequal distribution of benefits will become painfully evident. In support of its use, the lowest common denominator approach offers economic efficiency by suggesting that the needs of many can be met through the promotion of one, apparently common denominator. While it is true that the common denominator can hold people together in pursuit of a goal, if and when it loses its attractive power, irreparable harm may occur and future cooperative efforts among the same group(s) of people may be jeopardized. So far, the environmental movement has not made use of the lowest common denominator approach in its lobbying and public relations activities. This has been, and will continue to be, a step in the right direction. Whether this state can be maintained for a continued period of time remains to be seen. Somewhere along the line, explication of the need for environmental quality is likely to involve pressure upon that goal as a common bond.

The step from common bond to lowest common denominator is a short step usually taken in a state of frustration. The switch to a lowest common denominator approach could be the last step taken by an active environmental movement. Energy would be better invested in promoting an understanding of the consequences of poor environmental quality on human life. The ideal represented by environmental

quality should not be compromised in an effort to reach large groups of the population quickly. Oversimplification of environmental quality cannot and will not have positive consequences for human life. The common good of environmental quality lies in the possibility of a future in an environment promoting the health and welfare of the humans living within it. The common denominator approach will take less time to achieve a broad consensus, but runs the risk of anger and resentment developing once the goal has been achieved. When environmental quality as "all things to all people" turns out to be something less than that, the charges for using that approach will come due. The Common Good approach may take longer to build up momentum in the population but it can be done in a manner to form a more lasting commitment to the concept of environmental quality including all of the costs and sacrifices associated with achievement of that goal.

The Law as a Control Mechanism

Man has come a long way from some of the early Greek and Roman concepts about the Law. Perhaps reviewing some of these concepts would provide the basis for the development of a body of environmental law that would contribute to assuring a quality environment for the support of human life.

Two examples will serve to illustrate the changes in our concepts of the Law from those common in Greek and Roman times. Pericles held that laws are approved and enacted by a majority of the legislature or assembly but continued the thought acknowledging that, if obedience was achieved by compulsion alone, the law was then force and not law. (17)

Gaius, a Roman of the Second Century A.D., saw Law as not solely an expression of human will or institution but that Law was that which is rationally apprehended and obeyed. (18) Common to both points of view is the fact that laws do constrain or limit certain behaviors but remain, nonetheless, as principles within which people recognize inherent good or reason. Comprehension of the purpose of Law by the people appears to have been an element at least equal in influence to the fear of punishment in terms of promoting adherence to it. Both purpose and penalty came into the picture in early concepts of the Law. Today, the situation has changed somewhat. Penalty remains as a force motivating compliance but the element of inherent reason and purpose seems to have been lost in the process of increasing emphasis on the rights of individuals and collectives.

Historically, rights and duties are often paired in legislation. Early thought regarding the Law contained

an element of obligation on the part of the individual to the collective to which he or she belonged. Today, the rights side of the rights and responsibilities pair receives more attention and emphasis. The ego of modern man has been set free from many hindrances that existed in earlier times. The freedom, while exciting in terms of fulfilling human potential, also allows the ego to roam relatively unchecked and serves to reduce the importance attached to the overall welfare of the group. Society as a whole, and those elements valued by it, currently receive less attention than that given to the individuals comprising it. At some point, the elasticity in this situation will cease to exist and individuals will again be faced with the unappealing prospect (only recently so) of making sacrifices to contribute to the good of the group. That event will signal the rebirth of certain elements within the human spirit that have become dormant of late.

Environmental laws, following our emphasis on the ego, tend to be proscriptive seeking to remedy problems arising from existing practices. Breaking habits is never easy, especially if one is fond of the habit (which is usually the case). With the diminishment of the concept of the Law as having inherent purpose and reason, and given the task facing environmental law as being the correction of unsound practices, the struggle for environmental quality

is likely to continue for some time to come. Man-environment relationships share the problem of the Law as an element to obey in lieu of punishment with the other general areas of human life. The environmental movement will not solve this problem for the rest of society. If concern for environmental quality is conceived as a representation of the rebirth of a degree of selflessness in our society, it should be recognized as a limited rebirth -- hopefully a signal of a similar rebirth in other areas of human life leading to the development of a balance between man and environment, self and society, technology/economy and the future of human life.

The Law is an element of our everyday life, so much so that we tend to consider it "law" -- in its practical forms as opposed to "Law" -- in its abstract forms. Consideration of the law is usually found in law and philosophy classes rather than in the homes and offices of this country. A return to the consideration of the function and nature of Law can be both useful and appropriate in our society. The media continually reports cases that involve a resolution of conflicting rights between individuals, collectives, or combinations of both.

As we recognize the rights of an individual or collective, whether consciously or not, we establish

conflicts with the rights of others. "And so we find ourselves once again facing in a new guise the perennial problem of the place of government regulations and control in a free society -- a manifestation of the inevitable and universal tension between freedom of the individual and the welfare of the group." (19)

Conflicting rights usually require a resolution. If the resolution diminishes the rights of either party, the balance previously established will be upset. Even in cases where the balance was not good, the net result will be people face-to-face with adjusting to new rules and appropriate behaviors. The Civil Rights arena with its discrimination and reverse discrimination law suits is a good example of the relationship between the rights of individuals and groups and what can happen when change is introduced. Clearly, the introduction of Civil Rights legislation was needed, but little seems to have been done to address the impact of that legislation on the individuals and collectives of our society. Fifteen years after the 1964 Civil Rights Act, we are still addressing consequences of that action. One must wonder if judicial opinion can address the rights of any two parties so that the standing of both is not permanently reduced by an inflexible standard. Environmental court cases are slowly becoming a body of law. As with other court cases, environmental cases differ from one

another on major characteristics but the principle element of addressing rights in conflict holds them together as a body.

The Influence of Economics in Environmental Law

Environmental law decisions often involve penalties, sometimes of an economic character. These penalties do not always represent a significant cost to those penalized. The language of environmental law decisions has been exceedingly compatible with the economic character of those penalized. To assess a $5,000 per day fine against an enterprise standing to make $10,000 per day by remaining in violation will not likely change the behavior of that agency to become more environmentally compatible.

Although one would think any penalty would make the enterprise stop and think, it is clear that as long as the potential gain outweighs the penalty, the action in question will probably not be stopped. The imposition of more severe fines may not be the answer, either. In many instances, the increased fine will appear as part of the final cost of the product and be borne by consumers. Philosophically, this is not totally bad in that we all should share in the costs of environmental quality. But, in reality, the ability of a business enterprise to pass along those costs associated with its violation of environmentally

related law and regulations does not place the responsibility of the actions taken by the enterprise squarely on the shoulders of company management.

Indirectly, through the pricing mechanism, management runs the risk of losing its share of the market if the price of its product increases sharply due to environmentally related fines and penalties. Yet, that is a long-term risk, one aided and abetted by the short term focus of human thinking. As long as stockholders and consumers carry a big share of the costs of achieving environmental quality in the form of judicially imposed penalties without any protests, we are likely to witness no efforts directed at means of production that are compatible with achieving environmental quality.

If decision makers responsible for an action resulting in an environmentally-based penalty are not directly affected by the penalty, their perception of their responsibility in receipt of the penalty will probably not be altered. If responsibility for decisions and consequences does not become real to decision makers, can reasonable alternatives to environmentally destructive actions be expected to come about?

Preservation of environmental quality for ourselves as well as for future generations rests, in part,

on development of elements in environmental law addressing penalties that assess significant costs (economic and non-economic) against firms and individuals found to be acting in a manner destructive of the environment.

Corporations are composed of people, some of whom are the decision makers guiding its activities. Allowing these individuals to be shielded by the corporate persona provides them with a beneficial rationale for avoiding responsibility for violations committed by the "corporation." The corporation does not live, breath, sleep, eat or die. It acts only through its employees and not of its own accord. Assessing penalties for environmentally destructive acts solely against the corporate persona may not be as effective as the assessment of penalties against the decision makers having primary responsibility for the actions taken. Management must internalize a sense of responsibility for its actions and the consequences of those actions, especially those actions negatively affecting the environment.

Opposing parties in an environmental law suit likely view the environment differently. The law is further hard pressed to address the issue due to the lack of a scale on which environmental and economic matters can be rated simultaneously. The position of free enterprise is rooted in the history of this nation, its demise is not to be

expected in the near term future. However, if environmental groups and free enterprise interests persist in maintaining an adversarial relationship in which even compromise is impossible, the arena of man-environment relationships will not benefit.

Summary

The influence of economics on environmental affairs has been nothing short of pervasive. Traditional economic impacts stemming from supply/demand issues have joined the impacts of special interest groups in dominating modern thought on environmental matters. Legal control devices do not often include penalties significant in monetary terms to the corporations found guilty of environmental degradation.

The narcissistic age in which we live has elevated the concept of self-gain far beyond a reasonable level, far beyond the level containing many potential solutions for our environmental problems. Our process of valuation -- the means by which we assess worth -- has been greatly altered in an incremental manner with the increasingly more frequent use of technological capacity as a rationalization for the continuation of activities known to be harmful to the environment.

As a totality, the trends cited above represent a major shift in human thought and values. The machine-age

tendency to assume that everything of which we are capable is both good and justifiable, places us on a path that can lead to no other end than continued environmental degradation stemming from the overuse of isolated, fragmented self-serving goals in lieu of a global human awareness about the need for environmental quality in the support of human life.

The primacy of environmental quality among the goals of man is a concept yet to be widely recognized despite signs of giving evidence of this fact. We seem to prefer heeding other signs, signs that we allow to cloud recognition of the need for environmental quality while promoting profit seeking and self-gain. As we make progress toward our goal of global human recognition regarding environmental quality, we may actually be losing the war. While we must focus our attention on the immediate issue of creating this global understanding, when we have done so we may very well face the fact that there is little, if any, time left to make the necessary changes in human behavior to ensure continuation of life on earth.

Securing such a global human understanding requires that actions be taken on many fronts simultaneously, despite what appear to be overwhelmingly strong forces working in opposition to that goal. The two chapters that conclude

this thesis focus on means of bringing about such an understanding as well as the complexity of that task, a characteristic already noted in the earlier chapters of this work. That we can achieve knowledge of the tasks before us, that we can grasp the need for global human understanding regarding the need for environmental quality, demands our action toward the goal. Human knowledge and responsibility must be exercised in the directions we know to be supportive of human life on earth.

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Chapter Five: Environmental Education: The Path To Conscious Environmental Awareness

Introduction

Through the process we call education, man increases his knowledge. The educational process usually evokes images of the schools, colleges, and universities of this country. But, education has another, less structured and more personal side in the form of human experience.

Most of the formal education taking place within this country isolates the student from the world of work: the world to which the students seek admission upon graduation. In an age of specialization, this isolation is required in order to impart the knowledge of our academic disciplines and professions to their prospective practitioners. Yet, if the isolation is allowed to occur without attention to its disadvantages, the student may be in for a shock upon entering the "real world of work." Trends in career and life-long education programs appear to be working toward an integration of students, the academic process, and the world of work.

The content of formal education has come under criticism of late and some changes in response to the criticism are evident. Educational methods and materials have also been examined in a quest for better means of

reaching students. The specialization of knowledge and the desire to maintain a relevance in formal education to the experiences of daily life have led to the introduction of new subjects at some grade levels. Included in these new subjects is that of environmental education. As used in this text, environmental values education is conceived as a process whereby students gain an increased awareness of man-environment relationships. The goal of this process is to develop the ability of persons to act in an informed manner in their roles as environmental decision makers and consumers.

Keeping in mind the formal and informal aspects of education, this chapter will address environmental values education beginning at the general level of the relationship between valuation and education, continuing with the role of education in informed environmental decision making, and the growth of a generation of informed environmental decision makers. The final portion of the chapter will consist of a review of works in the field of environmental education.

It is the intent of this chapter to present environmental education as a counterforce to the momentum of the technologically and economically oriented segments of our society. Man's dominance over the earth has been the force behind the pendulum swing to the earth-as-object pole. Environmental education can serve as a means of

reversing that momentum to bring the pendulum back toward the middle path of balance and equanimity.

The Interrelationships of Valuation and Education

If we consider education as a broadening of one's awareness and knowledge, and valuation as the act of setting worth or value, the interrelationships between these two acts are easily discerned. In what approximates a simultaneous development, human experience (education) and human behavior (valuation) selectively reinforce one another. In some respects, each resembles the other with education being not only a broadening of human knowledge but also a prominent value of man. Valuation is also a human experience which can serve to broaden human knowledge.

To discriminately assess values, a knowledge of them and the costs associated with them is necessary. Blind pursuit of values without recognition of consequences may lead to problems, as it has in the past.

Many of our primary values can be distilled from the institutions surrounding us. Hospitals and health care institutions represent the value of preserving human life. Our law enforcement system speaks of our concern for the safety and well-being we desire as part of our lives. Our

transportation system and networks reveal our desire to have freedom of mobility in going from place to place.

We cannot escape our values though sometimes we try to do so. As an everyday matter, we do not usually distill our values from our actions and institutions. More often we merely act or receive services without pondering the "why" involved. As a result, it becomes possible to take for granted certain aspects of life without recognizing the values attached to them.

An interesting aspect of human values lies in a comparison of the verbal and physical actions of an individual. As discussed earlier in this work, speech and action can be contradictory when congruence is expected. For example, we may verbally support the concept of a democratic-republic from of government but our polling habits do not support such proclamations. In a sense, we desire the freedom to vote for our elected officials, but we also want the freedom to choose not to vote in those same elections. The key to a democratic-republic is the electoral process: the means of selecting representatives. The contradiction between statement and action is direct and clear. In environmental affairs, the congruence between our speech and actions may not be better than that taking place relative to our polling habits. We may not be capable of being totally

aware of the value-based conflicts in our lives but we do need to be mindful of the existence of this problem.

Learning that values have consequences can be a painful process. We all go through it in one form or another in childhood as we reconcile "our world" with the world around us. As adults, we experience the psychological consequences of our values and also come to know their financial and political consequences as well. As we are tested on our commitment to our values, we may change some, give up others or add new ones. Growth and change are fairly synonymous in human life. Recent emphasis on the ego, as discussed earlier, can be seen in the large number of self-help or self-improvement books now on the market. A situation without precedent in history.

With an increased awareness of self, modern man finds himself with a more complex decision making process as part of his daily life. For the individual, many new alternatives have been opened up regarding careers and life styles that were not previously available to them. The freedom of choice represented by those options is accompanied by the difficulty of the decision making process. Reduction of sex-role stereo-typing has opened career doors for women and men beyond what was once the norm. Instant gratification, made possible by the production and banking sectors, fits

well with the emphasis we place on the self on our society. As consumers of environmental quality, our keen sense of self often works to the detriment of environmental matters. Self-gratification through material means often leads to depletion of natural resources or to production of wastes that pollute the environment. When awareness of self and the potential for immediate gratification combine, it becomes extremely difficult to conceive of the earth as a partner in human development instead of the "warehouse" we take it to be.

Valuation as the foundation for action requires knowledge about the subject matter in question. This knowledge may include historical trends to give a perspective to the present situation, consideration of possible alternatives to the present situation, and analysis of the problem to see if its definition needs to be restated giving rise to new alternative solutions. Education can be effective in helping an individual recognize the need for this type of knowledge. Planning, especially in terms of man-environment relationships, must lead to the greatest number of possible alternatives and to the greatest degree of flexibility possible in meeting and resolving environmental problems. In that regard, planning has the opportunity to educate through example.

Education and Informed Decision Making

For many of us, our values regarding the environment are submerged within our psyche. Eliciting these values will require conscious effort. The educational components proposed in this chapter are intended to function as those conscious efforts and bring to daily thought those values otherwise submerged.

One task facing environmental education is the reestablishing within the mind of man, the direct link between self and earth that characterizes man-environment relationships. Restoration of this immediacy is critical to the success of the environmental movement. To be successful in this regard as well as in its other tasks, environmental education should not aspire to be a purely intellectual activity for two basic reasons: 1) Intellectual pursuits are often viewed as useless by those more concerned with pragmatic aspects of life; and, 2) Environmental quality is an extremely important aspect of life and without it, human life is endangered.

Reaching people presently struggling to meet their basic needs will be difficult enough without the added problem of environmental education being perceived as an educational luxury. Environmental education cannot be presented as a toy for occupying those expressing an

interest in it. Any form of environmental education that ignores the responsibility of each individual to bring about improvement in the quality of the environment will miss its mark.

People already posess an extraordinary amount of environmental knowledge culled from their daily experiences. Tapping this knowledge will provide a sound basis to develop environmental education as an integral component of our education system. But, as with the economic and political aspects of our society, the field of education is also subject to the activities of special interest groups. Teachers are faced with introduction of new curriculum components each backed by a group of supporters. Teachers can be expected to support only a finite amount of new curriculum additions. And, in the field of education, there is likely to be a questioning of the role and place of man-environment relationships in the classroom.

Resisting the efforts to achieve environmental awareness is the force of progress. As a societal goal, progress has been the spearhead of our efforts to improve human life. The concept of progress is firmly rooted in the Western world view. Modern man has deified progress. Despite acclimation to environmental principles during the past fifteen years, it is still somewhat sacreligious to

assail progress as being less than entirely beneficial to society.

Qualitatively and quantitatively, the notion of "more" guides our lives. Growth, expansion, and development seemed endless not only in the economy but also in the size and shape of our built environments. The recession of the early 1970's, along with the deterioration of our older cities, indicate that our pursuit of "more" will not last forever. The economic instability of 1978 and 1979 further speaks of our need to carefully assess the pursuit of progress. Despite the warning signs, our economic system remains relatively unaltered at its core. A growing concern for the quality of life may mean that those alterations are not far away.

A recognition of the fact that environmental rights and responsibilities are paired together is growing. Our ability to gather data about the quality of the earth's ecosystem has steadily improved during the past fifteen years leading us to finally acknowledge that the resources of the earth are not infinite.

Although awareness of the finite character of the earth's ecosystem is somewhat more global than it has ever been before, this awareness does not always translate into

remedial actions. Environmental education represents an opportunity to build on this awareness and transform our concern into action.

Although we each impact the earth to greater and lesser degrees, this variation of effect does not serve to modify the minimum level of responsibility borne by each of us as humans on the earth. If we accept the position that our efforts are meaningless as long as others refuse to cooperate, we do two things: 1) We continue to disregard our responsibilities; and, 2) we remove social pressure from those who would rather maintain their world view of progress than examine it more closely.

The American economic system seems to be headed in two directions simultaneously: toward continued capitalism and also toward modified socialism. Identifying problems in man-environment relationships using the measures of infringement of personal and corporate freedom will continue the process of framing those problems in the "traditional manner." Using the prevailing value system is a reasonable means of assessing man-environment problems but may not bring us any closer to effective solutions. Examining the assumptions and values underlying "our environment questions" may provide us with a new look at the situation and a new definition of the problem.

For human beings, growth usually involves, among other things, stress and pain. Social and economic systems are much the same in that a periodic stretching of those systems, through an examination of their axiological underpinnings, can lead to improvements in them. Environmental education can provide such a periodic stretching for man-environment relationships. Establishing the existence of the link between man and earth, amplifying the already existing sense of responsibility toward the earth and the need for citizen participation in the planning process that culminates in environmental policies are ready made goals for environmental education to set about achieving.

During the 1960's and 1970's, the concept of citizen participation in the planning process was the subject of debate within the profession as the rules and regulations governing federal grant programs were altered to formalize citizen participation requirements. The net result of the rule change has been the opening up of not only the urban planning process but also of other governmental functions. Paralleling the importance we attribute to the self in our society, the isolation of governmental activities and functions has been lessened to allow more direct citizen access to the workings of government. The citizen participation process is only as good as the citizens electing to participate in it. The net effect

of this emphasis on citizen participation has been a plus in the form of a change in attitude within the planning profession. The urban planner is now cognizant of the fact that planning has not only a transactive character between planner and client but also that a planner plans very much with, and not simply for, people.

The planner has made great strides in escaping some of the criticism leveled at his profession during the last twenty-five years. No longer totally isolated in a cubicle reviewing statistical representations as his planning domain, he is meeting with the people to be impacted by his plans. While the overall character of urban planning has not become simpler during the last quarter-century, there are more people willing to share the burden of that complexity and fulfill their responsibilities as community members.

The Pomona Community Workshop conducted by Lawrence Halprin [1] demonstrated the potential for community involvement in the planning process. Using the environment as a classroom, as Halprin did, brings home the pragmatic character of our rights and responsibilities as community members. Application of environmental knowledge and understandings on a daily basis, will not be easily achieved without more exercises in the Pomona format. Human nature being what it is, people sometimes do not want to participate until they

feel comfortable with the particular situation in question. The illusion of ease characterizing the role of elected officials and planners (at least in the eye of the public) often dissipates with the experiences of a Pomona-type workshop. Additionally, the individual gains a fuller sense of his/her role as a community member, as a consumer in our consumer oriented society. Bringing to life a realization that we are all also consumers of the environment is one step toward development of an environmental consciousness that can and should pervade daily decision making within the government.

Portions of our society are keenly aware of the benefits of consumer activism. Efforts demonstrating the consumer nature of man's role as a participant in environmental affairs, should serve to underscore the axiom that "we get what we ask for" especially in environmental matters.

Realizing that our actions and values help define the world we live in is one general result of our education system. Environmental education has the opportunity to refine that realization to include the fact that the quality of our environment depends on the choices we each make in our daily lives. The very nature of our lifestyles structure the quality of our environments. Whether our lifestyles are supportive or destructive of environmental quality may not

be readily determined but at least we should be able to make informed decisions about those lifestyles and their potential effects on the environment. The implementation of environmental education programs will not take place without political and economic battles as those wanting to ensure expression of their point of view, do so. And while the battles occur, time that could have been spent achieving a consensus about the role of environmental quality and the future of human life on earth will be lost.

Assembling an environmental education curriculum will not require that work begin de novo. The literature of the field, while not yet fully developed, is far beyond the embryonic stage. In addition to works based primarily in education methodologies, there exist works in closely related fields that bear directly on the content of environmental matters. The works selected for review in this chapter represent the leading edge of the field in the view of this author. Three of the works stem from academic bases and three from commercially published efforts.

The works have been selected recognizing that the field of environmental education logically includes at least three major foci: 1) Education methodology, 2) professional applications, and 3) development of a philosophy of man-environment relationships.

Two works address each focal point with one being academically based and the other commercially published. The review will begin in the order of the points listed above.

The common thread running through the six works consists of an emphasis on, and concern for, the role of the individual in man-environment relationships. Although using different approaches and terminology, all six authors express concern that values and emotions receive sufficient consideration and not be totally dominated by matters of economy and technology.

Educational Methodology

The two works presented in this section are:

1) Piaget in the Classroom, edited by Milton Schwebel and Jane Raph

2) "Urban Environmental Understandings," a Ph.D. dissertation by Leo L. Ronfeldt at the University of South Dakota

The book by Schwebel and Raph addresses the broader spectrum of education and will be presented first; the Ronfeldt dissertation focuses on specific curriculum suggestions for environmental education and will be taken up second.

Schwebel and Raph

To improve the probability of achieving success, any environmental education curriculum should attempt to

integrate proven and accepted educational methodologies. The work of Jean Piaget provides several approaches to education processes, each retaining an emphasis on the development of the child in relationship to the content of the curriculum.

For Piaget, "The freedom to act upon the world and to construct reality is both the aim and process of education". (2) To become an informed decision maker is a complex affair. "The process of developing a matrix of fundamental knowledge during childhood is a long one requiring active engagement over a period of years." (3) Even though knowledge may be presented in a segmented fashion without apparent relationship of subject matter, the success of the learning process is based on our ability to integrate the new material with our existing system of knowledge. As it were, to tie together the pieces of the puzzle and produce a meaningful and relevant whole. The ability to integrate in this fashion requires an intellectual flexibility to accept new evidence and knowledge as it is discovered. Environmental education has the opportunity to build on this process to encourage children to remain intellectually open and flexible throughout their lives: To base their life styles and relationships with the earth on the best and most current evidence available.

As we grow, we develop world views; paradigms of the reality we encounter. These paradigms make daily life easier and enable us to pull together the working assumptions we draw from our experiences. Our use of paradigms is an indication of the role of knowledge in human life. The importance of our experiences and thinking is also clear. "When we think new thoughts, we really are changing our relation with the world around us, including our social moorings." (4)

"When we come in contact with reality, we always transform it according to the network of concepts that we bring to the situation." (5) Just as our lifestyles and value structures can be considered to reflect the paradigms we use in life, our paradigms are reflections of the discrete and different learning situations we have encountered.

The relationship between learning and development demonstrates the dynamic nature of human intellectual growth. Our relationship with the earth is equally as dynamic and for good reason. "Another point that immediately becomes clear when one reads Piaget is the fact that the way in which knowledge is acquired is not through the senses from the outside sources but through the action upon the environment and integration with the environment. (6) The child grows cognitively not passively, but in what approximates a trial

and error system of experimentation, evaluation, and integration of information into wholes and models reflecting the reality the child encounters.

Research by Piaget and his followers has been successful in pointing out the fact that a child can learn quite well in a situation where he can "uncover" knowledge that faces him, to explore the situation facing him and elicit from it the relevant content. (7) The need for environmental education to stimulate interest in and provide opportunities to explore man-environment interactions is clear. Presentation of factual material, if done in a manner that elicits a positive response and stimulates further interest, will likely make environmental education more successful than if unimaginative and abstract approaches are utilized.

The environment is the largest and best classroom available for teaching environmental education. Use of this classroom should be an integral part of environmental education materials and methods. "It is absolutely necessary that learners have at their disposal concrete material experience (and not merely pictures) and that they form their own hypotheses and verify them (or not verify them) themselves through their own active manipulations. The observed activities of others, including those of the teachers, are not formative of new organizations in the child." (8)

The relationship between the experience and the developmental level of the child is extremely important. "Experience alone, no matter how rich or varied, is not sufficient unless the level of the child's development is considered." (9) The task for environmental education is two fold: 1) To use the environment as a classroom; and, 2) to develop an experiential-based curriculum with education content aimed at the developmental level of the student.

In summary, the educational methodologies advocated by Piaget hold a wealth of resources for the development of environmental education curricula. This final reference from the Schwebel/Raph work bears out the complex task ahead of us in developing educational materials about man-environment relationships.

> But knowledge is not simply built from the concrete to the abstract in the sense of representation, and each child has to construct an entire cognitive structure by abstraction from objects and his own coordinated cognitive activity, so that he will have the framework to understand the meaning of terms such as "New Brunswick" and "University" in a spatial, temporal, social, classificatory, seriational and numerical sense." (10)

Leo L. Ronfeldt

The absence of any substantial work in curriculum materials at the elementary and secondary levels was noted

by Ronfeldt and is reflected in the goal of his research work: to help promote a concentrated effort for developing a program of understanding and appreciation of our urban environments within the elementary school curriculum. (11)

The methodology employed by Ronfeldt to complete his research consisted of a series of surveys of teachers, curriculum specialists, and conservationists. Ronfeldt first obtained the names of likely survey subjects with the cooperation of superintendents through their recommendation of staff members having an interest in environmental matters. The next step was the initial letter to each subject group member along with the actual survey instrument.

Using a subjective scale of 0-5 points to indicate their opinion (0-low, 5-high) Ronfeldt asked each group to rate and review selected urban environmental understandings according to the need to incorporate them as key points in an environmental education curriculum. Ronfeldt defined urban environmental understandings to include "... such terms as 'facts', 'laws', 'principles', 'generalizations', 'concepts', and 'conceptual schemes'." (12)

The survey material also included a biographic data sheet for recording statistical information on each respondent. Ronfeldt's results document a variety of

observations about environmental education including the impetus for his efforts: the lack of a focus on the elementary and secondary levels in existing environmental education literature.

The hands-on experience supported by Piaget also received support from the respondents in Ronfeldt's survey. Abstraction has a place in environmental education but it is not the elementary classroom. Ronfeldt also supports the need for environmental education to take place on a continued basis and not simply be a hit or miss proposition. (13) An interesting result of the survey was the favoring of incorporating the environmental education content into other disciplines rather than the establishment of a new curriculum element. Ronfeldt was especially emphatic in this regard. (14) As an indication of professional educator preference, this part of the survey results should not be overlooked by those developing environmental education materials.

In summary, the Ronfeldt dissertation provides an excellent starting point for curriculum specialists to begin their efforts on integrating environmental education material into the existing course work of our elementary and secondary schools. This is a task that must be undertaken without falling back to the refuge of expense as an excuse to explain a lack of implementation.

Piaget uncovered the workings of the learning process. Ronfeldt established key points to be used in improving environmental education curricula. The role of education as a positive force in enabling man to conduct his life in harmony with the earth is one that cannot be ignored any longer if, as stewards of the earth, we are to remain conscientious in exercising our duties.

Applications for Environmental Professions

A natural continuation of environmental education at the elementary and secondary levels lies in ensuring that environmental professions continue to grow and have a "leading edge" of thought. The two works selected for review with regard to applications of environmental education within those professions are:

1) "Toward Objective Assessment of the Urban Visual Environment," a Master of Urban Planning thesis by Edward Stevens at Michigan State University

2) The Image of the City by Kevin Lynch

Both works represent a new direction for environmental professions in general, and for urban planning in particular: awareness and examination of psychological and perceptual aspects of man-environment relationships.

The Lynch work stands out as one of the major contributions to the literature of urban planning. Recognizing the need for research into the perceptual

and psychological aspects of environmental affairs, Lynch developed a system to analyze environments and raise to a conscious level, our awareness of sensory perceptions of those environments.

Kevin Lynch

Lynch, being aware of the vital role of perception in making our built environments livable, concentrated on that aspect of man-environment relationships in The Image of the City. Lack of confidence in our ability to negotiate a city can lead to tension and anxiety. (15) Most likely, we fail to explore our environments in proportion to our lack of knowledge about them and about their images.

Images of cities are both individual and collective. The collective image is the result of overlap in our individual images of cities. The collective image reveals features or elements held in common by its residents. The life of a city, as represented in the image held by its inhabitants can reveal what makes a city "work" or what keeps it from working in the eyes of its residents.

Cities exist as concrete forms but also exist as much in our minds. The character of a city as inviting or forbidding is important to those comtemplating settlement there as well as to those currently residing in the city.

The desirability of a city as reflected in images of it is not simply a matter of psychological research; it is also a matter of economics. If a city is perceived as undesirable, its economy may suffer through population and tax base decline. Pride in one's city is not a modern concept, neither is the sense of emotional security that we derive from knowing our environment and being able to successfully negotiate it in meeting our needs. (16)

The technological advances discussed in Chapter Two produced built environments on a scale unfamiliar to our sensory system. "We are not accustomed to organizing and imaging artificial environments on such a large scale; yet our activities are pushing us toward that end." (17) Whether we have the necessary perceptual skills matters not, we are being forced to develop them in order to survive in our built environments. To assist in researching perception in man-environment relationships, Lynch developed a five part analytical tool to help draw out the salient features of the environment that cue our behavior and "path-finding" in daily life.

This five part tool consists of the following elements:

-paths
-edges
-districts
-nodes
-landmarks (18)

Each element serves to cue behavior appropriate to it, and, to build the whole image of the city. Paths are just that -- corridors for movement, but they can also serve as edges: boundaries between two adjacent areas. Districts are recognizable wholes taking definition from characteristics or qualities of the area they encompass. Nodes are major points of activity. Landmarks are those elements, usually culturally significant, that can be used as guide points in finding one's way about the area.

Although the tool devised by Lynch represents a tremendous leap forward in gathering information about man-environment interaction, Lynch acknowledges a major problem with the system. "Even this dynamic method, the organization of formed sequences, does not yet seem ideal. The environment is still not being treated as a whole but rather as a collection of parts arranged so as not to interfere with each other." (19)

But in identifying this difficulty, Lynch is more appropriately identifying an aspect of human perception: that we tend to see parts and then wholes from them, as opposed to the reverse. Our perception although of parts, does not take place in isolation. Each act of perception is related, in some manner, to other similar acts, situations, or perceptual content we have encountered before. Our

memory of past experiences is a part of the perceptual process. The events prior to and after each act of perception also affect the perceptual acts. "Nothing is experienced by itself, but always in relation to its surroundings, the sequence of events leading up to it, the memory of past experience." (20) Indeed, our images of the same object may be different depending upon variables such as time of day, emotional circumstances, degree of tension or curiosity, and other similar elements.

Active conscious participation in our perceptual processes is advocated by Lynch specifically regarding our visual perception of the environment. For Lynch, the lack of participation has serious consequences, "An art of city design will wait upon an informed and critical audience. Education and physical reform are parts of a continuous process." (21)

Perhaps the two biggest obstacles to achieving the participation called for by Lynch lie in the subtle nature of the perceptual process and in the fact that our concern for the images we hold of our environments is low. "Our environmental image is still a fundamental part of our equipment for living, but for most people, it is probably much less vivid and particular today." (22)

The following citations serve as a summary of Lynch's position as well as a measure of the contribution he has made to the field of man-environment relationships.

> As an artificial world, the city should be so in the best sense: made by art, shaped for human purposes. It is our ancient habit to adjust to our environment, to discriminate and organize perceptually whatever is present to our senses. Survival and dominance based themselves on this sensuous adaptability, yet now we may go on to a new phase of this interaction. On home grounds, we may begin to adapt the environment to the perceptual pattern and symbolic process of the human being. (23)

And, with a continuing emphasis on the role of education as a prelude to commitment and action, Lynch offers the following:

> In the development of the image, education in seeing will be quite as important as the reshaping of what is seen. Indeed, they together form a circular, or hopefully a spiral process: visual education impelling the citizen to act upon his visual world and this action causing him to see even more acutely. A highly developed art of urban design is limited to the creation of a critical and attentive audience. If art and audience grow together, then our cities will be a source of daily enjoyment to millions of their inhabitants. (24)

Edward Stevens

Stevens, taking his cue from Lynch, directed his efforts to the need for objectively assessing the visual aspects of environments. Stevens offers material on the perceptual process per se, a complimentary effort to Lynch's method of environmental analysis. The major emphasis of Stevens' work is on the nature of the sensory process. The explication of differences between levels of perception

brings a new element to man-environment relationships. Visual elements of our built environments can promote tension or relaxation in us, depending upon how they are utilized.

Advances in psychological and physiological research have made us more knowledgeable about the manner in which we become aware of our environments. The mental and physical adaptability of man has helped to keep the effects of our built environments on us somewhat hidden.

The subtle nature of the perceptual process has also contributed to the difficulty of the work on the psychological relationship between man and environment. "Many resultant images and concepts (of the environment) are formed with visual material, quite without the observers awareness and dissatisfaction may be felt without clear knowledge of the sources." (25)

Stevens listed the four major categories or levels of perception as:

-the physiological
-the social
-the psychological
-the cultural

Of these four levels, the cultural is perhaps the most elusive to grasp both in process and in content. Yet, it is

probably the most important mode of perception in terms of directing the character of our future city-building efforts.

Our built environments represent in solid form the values of our culture. In general, the cultural mode of perception seldom rises to a conscious level as we go about our daily lives. (26) This may, in part, explain why we seem to be living in built environments not appropriate to our needs and desires, indicative of our inability to perceive the directions we have taken as a culture in the development of our cities. On the plane of our cultural perception, we lose a certain amount of sensory content reflective of our values with each passing generation. The methods and means of generations past once made obsolete by technological and scientific advancement, are lost from our vocabulary and replaced by new means and methods.

Most of us take for granted the automobile as a form of transportation -- as a "given" in our society. Recent concern from energy consumption and ecological bases has forced some consideration of the possibility that the automobile might have negative consequences in addition to the positive ones we already know. But it is more than a matter of automobile exhaust, gasoline consumption, smoke-stack emmissions, water pollution and depletion of natural resources. Our attention must be focused on the quality and speed of our lives.

"If the complexity, density and pace toward which many large cities are currently moving continues and the visual environment develops in the misunderstood and haphazard manner that it presently is, people are going to find it increasingly difficult to function in cities and find their way around according to their own will and unassisted." (27)

The challenge to the environmental professions arising from the work of Edward Stevens lies in advances in our design and planning skills that address the psychological and physiological needs of man in his built environments. "Visual design based on human visual perception criteria is probably one of the last hopes for retaining our urban environments in which human beings can maneuver with the freedom of their own control." (28)

Philosophies of Man-Environment Relationships

While education and professional efforts will be instrumental in improving man-environment relationships, the ultimate focus must be on the development of a philosophy that promotes the quality of human life on earth and the quality of the earth supporting that life.

The two philosophically based works selected for this discussion are:

1) "Some Bases for a Humanist Philosophy of Planning", a Master's Thesis by Edith McBoyle at the University of Waterloo

2) Bioethics by Van Rensaleer Potter

The McBoyle work addresses the field of urban planning but also offers an approach to the larger field of man-environment relationships. The Potter book takes a broad approach to man-environment interaction and lays the ground work for development of a philosophy based on a holistic mode of thought.

Unless environmental education efforts result in profound impacts on human behavior, especially on those behaviors negatively impacting the environment, we will have made at the best, only superficial changes that may not be beneficial in the long run. Realizing that the quality of human life and the quality of the environment rest upon our success in developing man-environment relationships that result in harmony and compatibility, the role of a philosophy governing those relationships is obviously not minor.

Edith McBoyle

Although planning techniques have been refined during the past fifty years, questions regarding the role of the planner, the value of planning, and relationships between planner and client remain only partially answered. McBoyle's work goes a long way toward providing answers to these questions.

Taking the position that man is a being with both dignity and potential, McBoyle puts forth a humanistic

base for planning efforts. (29) A base founded in holism, not in atomism. McBoyle identified a problem facing the planning profession in the specialization of interests evidenced within it. (30) This specialization or fragmentation of professional opinion is usually healthy, but human nature functions to produce some negative consequences. Specialization can create defensiveness rather than openness and cooperation toward other special interests. Specialization without cooperation and understanding has few positive aspects. Reaching into the matter of ethics, McBoyle suggests that planning in its truest sense really requires a new ethic, an ethic at all levels of social organization. From a humanisitic perspective, McBoyle surveys man-environment relationships including the domination of nature by man. "Man's inhumanity to nature is as degrading and unwise as man's inhumanity to man. And this is logically so, since man is in reality merely an extension of nature." (31)

McBoyle believes that efforts to improve man-environment relationships should be oriented <u>both</u> towards refining our knowledge of man <u>and</u> man's environments. "As cities have been, they have manipulated the dominant influence of time, secular, sacred or perhaps both and can be attributed to a degree of success or failure on that basis. As cities will be, their degree of success will depend on the knowledge and insight of this complex being, man." (32)

The dichotomy of man and nature has been discussed throughout this thesis. McBoyle, recognizing the dichotomy and the role of nature in meeting human psychic needs restores wholeness to nature in one statement: "Nature in short, is both aesthetic and functional." (33) The idea of communion with nature also surfaces in her thesis as do references to restoring the concept of spirit to nature, joining our well known recognition of nature's utility. "In almost all forms of decision making, vested interests seem to provide the main basis for action, and 'rational' or 'economic' man the only type of man catered for." (34)

Our emphasis on efficiency and profit is seen by McBoyle as the culprit for many of our present problems. "The basis of the present dilemma of technology and human values lies simply in their mutual exclusion." (35) Reiterating the need for integrated or holistic approaches to man-environment relationships, McBoyle continues: "Neither is a false god unless their worship becomes monotheistic." (36)

McBoyle does not blame the "system" or nameless forces for the mutual exclusivity of technology and human values. She places the blame where Ronfeldt's research and Lynch's analysis of the situation put it: on the need for each individual to become and <u>active participant</u> in their

relationship with the earth. Accepting responsibility for our actions is a fundamental aspect of the humanistic planning McBoyle supports. Not only are we the stewards of the earth but: "The stewardship of ourselves must also begin." (37)

The individual is not without an ability to impact man-environment relationships. "The power of personality, in terms of commitment to purpose within any system will, in the final event, produce some results." (38) Man does have a will and it can be a powerful force in achieving goals he sets for himself.

McBoyle supports educational efforts to produce informed decision makers. One of the reasons for her position is a belief that we need to know where we are in agreement on problems rather than to continue knowing only where we disagree. Establishing common ground in environmental affairs is one of the toughest problems facing man in that particular arena.

In a statement that points out not only some of our current problems but also some of our resources to meet those problems, McBoyle summarizes many of the key themes of her thesis:

> If there is one lesson to be learned from all this, it is that man is the prime agent for technological and cultural development on this 'spaceship earth'. That being so, not only is a full understanding of the natural ecology of our habitat essential but so too is the most complete knowledge and insight into the total reality of man, the ecology of man, mind and body. (39)

Van Rensaleer Potter

The work by Van Rensaleer Potter is a broadly formed discussion of philosophies underlying man-environment relationships. Potter advocates a sense of humility based on our limited capacity to comprehend and, in some cases, resolve the effects of our technological successes. Potter goes even further differentiating between science and wisdom, two terms that have become fairly synonymous in the Western world. "Science is knowledge, but it is not wisdom. Wisdom is the knowledge of how to use science and how to balance it with other knowledge." (40)

Potter's remark, at first glance, may not seem profound but when considered along with the fact that our society places an extreme emphasis on the role and value of science, Potter is definitely taking a stand on a very important issue: the type and uses of knowlege in man-environment affairs. Potter does not support the concept of progress regardless of consequences. To the contrary, he asserts that the idea of progress is so deeply rooted in

our history that we accept it as a fact of life and therein lies the danger: if we accept progress unquestioningly, we invite the consequences of progress -- good or bad.

Shaking loose our faith in technology and science may not be easy. For Potter, like McBoyle, values and actions are directly connected. Potter suggests that there is presently no ethic existing relative to man-environment relationships. Our emphasis has been on our rights rather than on our environment responsibilities. Although the word is not used by him, Potter supports a holistic approach to man-environment interactions. "What is needed is a new dicipline to provide models of life styles for people who can communicate with each other and prepare and explain the new public policies that could provide a 'bridge to the future'." (41)

Potter's concern is not without a scientific basis. One gap in the current literature of man-environment matters is the absence of studies on human adaptation due to environmental stress. This gap prevents us from knowing with any certainty exactly what we are doing to ourselves when we pollute the environment.

Unless we are successful in shattering our self made image of invincibility, we may assume and assure

ourselves out of existence. "Every living cell in every organism from the lowest bacterium to man, has to come to terms with its environments." (42)

Our hope lies in the human ability of reflective thought. Allying with Teilhard de Chardin, Potter lends his support to the fact that we can and must shape our futures. Our strength lies in an ability to think and, to think about how we think. The development of an ethical basis capable of achieving commitment and action is a must as far as Potter is concerned: Consciously working toward the development of our future; toward the maintenance of the earth for the support of human life.

With very direct references to the role of education, Potter joins the other authors discussed in this chapter when he writes:

> Perhaps what is needed is not conservatism or liberalism but realism -- realism about the nature of man and realism about the nature of the world we live in. We are now talking about what every educated person ought to know and does not. There is not presently available within a single cover any reliable authoritative summary of what one would hope a college graduate or even a high school graduate might be expected to know about man and his world and the relationship between order and randomness in each. Knowing involves knowing what we do not know as well as what we do know, and there is little doubt that if a group of the best minds from seven continents were mobilized they could come up with surprisingly large areas of agreement on knowledge and ignorance. (43)

Summary

The thoughts holding together this six works and the introductory section presented in this chapter, can be summarized as follows:

-We learn through experience with the world
-Our ability to learn grows as we grow
-Our relationship with the earth is dynamic, not static
-Reflective human consciousness enables us to develop and achieve our futures
-Humanism is needed to temper our mechanistic world view and approach to life
-Human knowledge dictates that we take responsibilities properly ours for ensuring the quality of the earth and its capability of supporting human life

The case for environmental education is compelling. Our future, in many respects, depends on increasing our awareness of man-environment relationships, awareness of the complexity of man, awareness of our values, and of the fragile character of human life on earth.

Educators, environmental professionals and philosophers have identified the common ground that we can use to develop new lifestyles and values more appropriate to the ability of the earth to sustain human life. It remains as a challenge to us to take up where they left off and stretch their contributions exceeding what appear to be limits to our abilities as men to live with the earth and not simply on it or using it.

FOOTNOTES

1. City of Pomona and Lawrence Halprin and Associates, Pomona Community Workshop '74, (Pomona, City of Pomona, 1974)

2. Milton Schwebel and Jane Raph, Editors, Piaget in the Classroom, (New York, Basic Books, Inc., 1973), pp. 21-22

3. Schwebel and Raph, p. 16

4. Schwebel and Raph, p. 79

5. Schwebel and Raph, p. 167

6. Schwebel and Raph, p. 219

7. Schwebel and Raph, p. 42

8. Schwebel and Raph, p. 74

9. Schwebel and Raph, p. x

10. Schwebel and Raph, p. 203

11. Schwebel and Raph, p. 212

12. Leo L. Ronfeldt, "Urban Environmental Understandings Necessary for Incorporation at the Elementary Levels", A Ph.D. Dissertation at the University of South Dakota, 1969, p. 2

13. Ronfeldt, p. 12

14. Ronfeldt, p. 12

15. Ronfeldt, p. 127

16. Edward Stevens, "Toward Objective Assessment of the Urban Visual Environment", A Master's Thesis at Michigan State University, 1973, p. 171

17. Stevens, p. 176

18. Stevens, p. 253

19. Stevens, p. 252

20. Stevens, p. 252

21. Kevin Lynch, The Image of the City, (Cambridge, Mass., The MIT Press, 1960), p. 4

22. Lynch, p. 4

23. Lynch, p. 12

24. Lynch, pp. 46-47

25. Lynch, p. 1

26. Lynch, p. 4

27. Lynch, p. 117

28. Lynch, p. 124

29. Lynch, p. 95

30. Lynch, p. 120

31. Edith McBoyle, "Some Bases for a Humanist Philosophy of Planning", A Master's Thesis at the University of Waterloo, Ontario, Canada, 1973

32. McBoyle, p. 1

33. McBoyle, p. 5

34. McBoyle, p. 18

35. McBoyle, p. 65

36. McBoyle, p. 90

37. McBoyle, p. 120

38. McBoyle, p. 120

39. McBoyle, p. 92

40. McBoyle, p. 109

41. McBoyle, p. 123

42. Van Rensaleer Potter, Bioethics: Bridge to the Future, (Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1971), p. 49

43. Potter, p. 61

44. Potter, pp. 78-79

Chapter Six: Improving the Quality of Man-Environment Relationships

With the underlying tone of each chapter being the role of human knowledge and responsibility in environmental decision making, this thesis has attempted to demonstrate the need for a conscious awareness of our actions within the environment we call Earth. Taken on its own, each chapter focuses on a set of closely related issues in the arena of man-environment relationships. In summary, these issues are as follows:

- -the objectification of the natural environment
- -the isolation of man from the earth
- -the role of alternatives in environmental decision making
- -the Law and the Common Good in a Free Market
- -the need for environmental values education
- -the nature of the perceptual process as it relates to man in the environment

What follows is a brief recapitulation of each issue leading to a series of recommendations regarding four sectors of man-environment relationships: 1) Environmental Education, 2) Planning Education, 3) Planning Practice, and 4) A General Philosophy of Man-Environment Relationships. The recommendations are made in view of the material presented in the foregoing chapters and with the realities of the political and educational processes present in our society in mind.

The Environment as Object

The environment has steadily become more of an object during the last two hundred years. We manipulate the earth to meet our needs. The problem lies not in the act of manipulation but in the fact that we perform this act mostly unconsciously. Machines enable us to manipulate the environment at an unprecedented rate and with unparalleled ease. This has not been conducive to developing a conscious awareness of our manipulative acts. Technology enables us to manipulate the earth from great distances permitting us to avoid direct contact with the environment, and to avoid contact with the consequences of our manipulative acts.

The objectification of the environment, beyond the sheer quantitative aspects involved, also has impacted our emotional and psychological relationships with the earth. What was once a body giving sustenance to the human spirit, is now, all too often, itself devoid of spirit in the eyes of man. The stewardship of the earth, once a well recognized responsibility of man, has faded in brightness as man has become progressively enamored of the earth-as-object.

The key to reversing the momentum of the earth-as-object viewpoint, lies in the gradual reawakening within man of the fact that the earth is more than a heap of minerals, chemicals, and gases. Whether this is done through

introspection, education, or mystical experience matters not. What does matter is that it be done, and done on a large scale so that the people of the earth once again directly know the earth as both spirit and matter.

The sustenance of human life, physical and spiritual, can be accomplished in harmony with the rhythms and cycles of the earth. Cooperation, conservation and sacrifice should become the keynotes of a movement to establish new lifestyles in harmony with the earth.

Isolation of Man from Earth

By reassessing the spiritual aspect of the earth, man can begin to decrease his isolation from it. The quality of human life and the quality of the environment are not mutually exclusive goals. Until the links between self and earth, and self and other are again firmly established, the isolation of man from earth cannot be expected to diminish of its own accord.

The isolation of man from his fellow human beings and the isolation of man from the earth are related circumstances. As we have become more distant from the environment supporting our lives, we have also become more distant from the others sharing that environment. The current emphasis on the human ego and the development of the self,

even to the exclusion of the needs of others, has led us to the atomistic society in which we live. Reintegration of self with others and self with the earth is necessary if man is to survive and the earth is to remain capable of supporting human life, as we know it.

The Impacts of Technology and Economy

Our twentieth century world is dominated by technology in its various form and guises. To some, technology is a cure-all, and for others it is one of the greatest menaces to the future of human life. Again, as it has throughout the course of this thesis, the truth lies in the middle of these two positions. Certainly, the quality of life achieved by the industrialized nations of the world has been responsible for the growth and development of man beyond limits once thought to exist. Yet, the blessing has also brought with it some pain. Our machines and our technology are highly developed but not to the point that there are no disadvantages from utilizing either in the support of human life.

The choice is not to use or abandon technology but to use or misuse it in the achievement of societal goals. The choice, at least superficially, appears to be an easy one, but it is not. The wishes and desires of each human being will be profoundly affected if a more conservative use

of technology is adopted. If we become aware of our capacity to not use technology all of the time to solve our problems, we may become a bit more free from the hold it has one us. But this awareness will have a price in the form of individual and societal sacrifices not prevalent in our society known for its rush to gratification.

Beyond making manipulation of the earth easier, technology and economy have dominated the value system of this country during the twentieth century. That fact, in and of itself, is not an indictment. But, when viewed along with decisions made under their dominance, technology and economy appear less kind to man. There is no question that technology and economy should have a prominent place in our value sytem. Yet, there is a question whether they should be the solely dominant values in our society.

When viewed from a historical perspective, this overemphasis on the rational and material aspects of life is in contrast to the era of the Romantics and their emphasis on man's spirit. Each viewpoint represents the peak of a swing of the societal pendulum of values, yet neither position is sufficient, in isolation, to guide the decisions necessary for the advancement of human life.

Our built environments exemplify our overemphasis on technology and economy. These environments tell the

story of dominance of technology (we can) and economy (we want) in our value systems. The built environment typically surrounds enclaves of the natural environment rather than being settlements integrating the natural and manufactured worlds. Many of our cities are beautiful and bespeak the power of the human will when focused on a goal. But, these same cities are also symbols of the machine-paced world in which we live. Is it really a tribute to man that he has become the master mechanic of his built environments? Or is it an indication of our isolation from the natural world that gave birth to human life?

The Role of Alternatives in Environmental Decision Making

Although it has received its share of criticism, Arcosanti, the work of Paolo Soleri, plays an important role in emphasizing the degree to which our built environments have become sterile and infertile like the machine rather than creative and productive like man. An ideal, a dream, or a vision plays a role in the advancement of human life in that man is likely to achieve his goals if he pursues them based on ideals than if he simply takes what comes along in life and makes do with it. We truly do not know our limits as men until we focus our wills on the achievement of a common goal. If the goal is high, well defined, and stirring, although we may not actually achieve it, the progress we do make will certainly be more than if we did not have an ideal as a motivating force.

Positing an ideal provides a target for guiding our actions. But more than this, the ideal can serve to open up undiscovered methods or alternative courses of action. The statement of an ideal may lead us to reconsider currently accepted methods and procedures in man-environment relationships. In any event, consideration of alternatives must become a dominant aspect of environmental decision making.

The initial moves toward that condition are presently visible in the form of environmental impact statements required under the National Environmental Protection Act (NEPA). Resistance to compliance with NEPA provisions indicates that the values underlying NEPA have not been widely accepted as of yet. Voluntary compliance with NEPA provisions, when it does come about, should be an excellent indicator of the development of a consensus as to the need for environmental quality.

Some resistance to NEPA provisions is economically motivated. If economic incentives function to perpetuate environmental degradation, the achievement of environmental quality will be unlikely. Given the nature of our economic system, incentive to the achievement of environmental quality must be strong and decisively in favor of that goal.

The concept of progress is deeply rooted in our value system and consciousness as Americans. This value has done well for us but there does remain a question of its utility relative to the quality of life. If progress means a reduction in the quality of human life or the degradation of the environment, our pursuit of it is highly suspect. The need is for the development of an ability to discriminate types of progress along with their respective consequences.

The Role of Law

Hope regarding both the influence of technology and economy and our attraction to progress lies in the formation of a body of environmental law, addressing both the nature of our political systems and the structure of our economic system. The law has available to it materials to develop environmental decisions that recognize the best and worst parts of human nature and balance the rights of individuals and groups in the disbursement of social goods. The development of environmental laws that recognize human nature depends on our awareness of our relationships with our environments. If we fail to raise to a conscious level the operating rules governing our relationships with our environments, the development of environmental laws relecting the complex interactions of those relationships remains unlikely.

Awareness, in the content of this thesis, is approached through education. An awareness of the need for environmental quality may develop intuitively within some people but, for the most part, the population of the earth requires education relative to the role of and need for environmental quality in the support of human life. If measured quantitatively, the weight of this thesis has been on the educational process as a means of increasing man's awareness of his relationships with the earth.

The Need for Environmental Education

Education, if conceived as the key to development of the human self, is capable of transforming society. On the other hand, so are revolution, famine, natural disaster, and war. Of all of these forces capable of making vast changes in society, education addresses the moral and spiritual side of man that is too often hidden from view. In an effort to develop the self, our society has encouraged exploration of new values including some traditionally held to be taboo. Pulling back the reigns on this exploration is proving to be difficult. The Buddhist's Middle Path is a difficult path indeed for twentieth century Americans. We are in the midst of a dilemma in the true sense of the word, as a choice between two undesirable alternatives.

Our economic and political system have implanted values in our consciousness of the world that we take

"as given". The earth, because it has been manipulated by man, is beginning "to tell us" that we have not been very skillful in our manipulations. Our dilemma consists of a choice between either the modification of our economic goals or the continued desecration of the earth as we seek to fulfill our dreams. As long as the choice is presented as a dilemma, our selection of one option or the other will not likely be accomplished in an expeditious manner.

Part of what we accept as "givens" when we are born are our perceptions of the world. Our perceptions are tested and questioned as we grow and develop. Despite the degree to which we modify or change them, our perceptions of the world remain unquestionably valid for us. That we each perceive the world uniquely cannot be overemphasized. We do perceive enough of the world in similar manners to make daily life relatively easy and safe, but the fundamental fact is that our perceptions of the world are unique to each of us.

In addition to environmental issues as we know them, environmental education should also incorporate a focus on the human perceptual process and how that process affects us in man-environment relationships. The planner especially needs to become more aware of the manner in which human perception affects his professional life.

The issue is clear: Given the topics just summarized, can environmental quality be achieved without major modifications of our current economic and political systems? The answer cannot and will not be given in this thesis. What can be given is a series of recommendations designed to help bring about the achievement of environmental quality.

Recommendations: Environmental Education

A successful venture in the field of environmental education will likely involve curriculum elements that are parts of existing subject areas. The introduction of environmental education as a separate area of study, especially at the K-12 levels, has two major disadvantages. First, if one is seeking to promote an awareness of environmental quality underlying all else in human life, it would seem to be better to approach that issue through integration of an environmental perspective into existing course materials rather than to isolate the environmental perspective from existing course work.

Second, holding forth environmental education as a new and distinct area of study at the K-12 levels may only alienate educators already feeling the push of advocates of specialized curriculum elements. The resistance to environmental education material will be strong enough without

added resistance from reluctant teachers and administrators. Environmental education should also be a continuous system of education. Anything less will likely not be enough to serve as an active opposing force to the momentum of present societal values. Environmental education faces the unenviable task of trying to gain an audience away from the advertising media currently holding their attention.

Environmental education should seek to bring to life the fact that environmental quality cannot be achieved without a constant effort on the part of all of us, involving certain behavioral changes in our lives. If environmental education does not manage to convince us that a lifestyle compatible with the earth is both possible and necessary, we are unlikely to set about developing such lifestyles.

The final recommendation regarding development of environmental education stems from the work of Jean Piaget. As long as the educational content and methods are appropriate to the level of the child, a great deal of material can be taught. Environmental education must be mindful of the developmental level of its pupils. Developing educational materials containing environmental matters appropriate to the mental levels of second and third graders may prove to be difficult, but the difficulty must not be allowed to dissuade us from taking action in developing the materials.

Finally, a comment in a philosophical vein, if environmental education is to succeed in developing a generation of informed and aware decision makers, it must be put forth as the keystone for all of our educational efforts. We must recognize it as the education to prepare us as active participants in life, and within the ecosystem we call earth. The breadth and depth of human life must be drawn upon to convey the need for environmental education as a means of improving on the possible futures that await our encounter with them.

Recommendations: Planning Education

Not being able to rely on more than about seventy-five years of historical experience, planning education has had to cope with great changes in man-environment relationships, especially in the last fifteen years. Many of the innovations introduced into planning education have been based on our changing knowledge of our relationships with the earth and our built environments. However, these innovations have tended to reflect the dominant values of our times. There has not been a wide spread addition of couses addressing matters such as the imaging of the built environment, perception of the built environment, and physiological and psychological responses to environmental stimuli. Addition of such course work would expand the knowledge of the planner about the humanness of man in the environment.

If the planner is a leader in the field of man-environment relationships, he must be equipped to lead, and to be sensitive to the needs of those he leads. Planning education should develop a focus on the human being within the environment. The political and psychological aspects of decision making in our society should also be included in that added emphasis. A planner's education enables him to clearly define environmental issues, often times with a clarity not possible for the general population, in their own struggles with those issues. To keep this gap between the planner and his clients from endangering his efforts and their chances for success, a focus on the self in the environment should be established within planning education.

Planning education might also consider incorporation of what it means to be on the receiving end of comprehensive plans. The transactive nature of the planning process warrants development of a sensitivity within planners to the emotions one feels when a plan or some other documents proposes to dispose of portions of a neighborhood or city in the name of progress and a better environment. A planner's clients intuitively understand the issue of security in knowing one's environment and being able to count on it when needed, for support.

Often, the planner threatens the very people for whom and with whom he plans. Planning education instills

respect for tradition as well as an understanding of the role of change in society but it does little to address the emotional and psychological issues associated with the introduction of change via planning activities. A planner's time in the classroom often represents the most intellectually free time in his life. The classroom is a time for learning and experimentation, two activities sometimes hindered by the political process and press of daily work associated with a planner's job. Changes in planning education should not serve to lessen the freedom of that academic experience. But, courses should continue to provide prospective planners with the opportunity of working with "real world" problems.

The most needed addition to the scope of planning education is a continued and articulate focus on the fact that a planner is a person, that people for whom and with whom he plans are human beings, like him, and that planning activities need not be solely adversarial.

The history of planning surrounds us in the form of our built environment, the working and living places of man. And, therein lies the true focus of planning: the people for whom and with whom we plan our environments. If planning education were to develop a humanistic philosophy like that advocated by Edith McBoyle, planners might become more cognizant of their humanness as it affects their

planning activities, and therefore, be better able to tap the human resources surrounding them in the form of their clients.

Recommendations: Planning Practice

Emphasis on citizen participation in the practice of planning should be continued. But more than this, an understanding of the value underlying the statutory requirements for citizen participation should spread throughout the profession rather than a feeling that citizen participation is a burden to the planner. Granted, early citizen participation experiments may not have been very successful. But, that was likely due to the unfamiliarity of the planner and the citizen with their new found roles.

It would be interesting to witness extensive use of the workshop technique similar to the one used by Lawrence Halprin in Pomona, California. This technique provides a tool for citizens to experience the actual components of the planning process -- technical, economic, and political. The key to success of the workshop technique lies in involving the participants, and not allowing them to simply be observers.

The work of Kevin Lynch on the environmental imaging process is another excellent focus for incorporation into planning practice. Sometimes confusion stemming from

the imaging process clouds communication between planner and client. The planner, not being a psychologist, must feel like a fish out of water in these situations. It is difficult for a planner to function when his clients may not be able to articulately express their needs and concerns, or change them continually, forcing the planner to try and hit a magic target.

Our images of the environments in which we live can tell us a great deal about the success or failure of those environments in meeting our needs. Raising to a conscious level the image of the environment, may not be a task appropriate to the planning profession, but, given the fact that the imaging process represents a resource for the planner, can deferrment of this task be justified or left to another, perhaps less interested, profession?

The planning profession appears to be wavering between an overemphasis on numbers or people, as the focus on its activities. The role of quantitative methods has been well established in the planning profession; the role of emotional or psychological matters has not been as well established. Planning is indeed a profession oriented toward people. Transforming people in numbers has been too often the technique used to "involve" them in the planning process. Quantification, when it eliminates or ignores the

human element in a planning situation does a disservice to the planner and client, alike.

Common sense indicates that consideration of the human element takes place along with the use of quantitative methods. Whether this will happen or not depends on the individual planner involved, and their sensitivity to the human nature aspect of planning.

Recommendation: A General Philosophy of Man-Environment Relationships

The development of a general philosophy of planning should include emphasis on the qualitative as well as quantitative aspects of man and environment. The relationship in question is one of human to environment, not statistic to statistic. If the general public perceives the essential nature of man-environment relationships to be statistical, there should be no doubt as to their position that their psychological and emotional needs are not being met in the planning process. If the environmental professions do not take the lead in development of a philosophy of man-environment relationships, including a humanistic and holistic bent, can the general public be expected to arrive at such a philosophy on their own accord?

Environmental professions should function as a leading edge in the development of concepts, lifestyles,

and values for man-environment relationships, based on the needs of man and the ability of the earth to meet those needs. If we each bear a responsibility for the achievement of environmental quality, should not the environmental professions begin to exercise their responsibility so that others, not as environmentally aware, are provided with the means of developing values compatible with the ability of the earth to support human life? Statistical studies and theories are important but so too is the presence of a philosophy that is capable of motivating the human actions necessary to ensure that the earth remains capable of supporting human life, and that the quality of that life is not diminished in a quest for progress, regardless of cost.

Each individual in the ecosystem bears a responsibility to act in a manner not destructive of the earth. Until there is a wide spread recognition of that fact, we cannot really expect the policies developed aimed at the achievement of environmental quality, and witnessing success in the application of those policies, when they are developed.

Truly, environmental quality and the future of human life on earth is not a political issue to be debated on partisan bases. The survival of human life is not a luxury to be obtained only when conditions permit. The purpose of life must become uppermost in the minds of

each individual in our society as they go about their daily actions. We make our future and the condition of the earth in those futures. We bear a responsibility to act in a manner that is conducive to the maintenance of the experience we call human life.

We must take the situation we have allowed to become a dilemma and develop it into a true choice. Only conscious human action, only the full force of the human will, can effectively bring about the societal changes necssary to ensure human life on earth. As long as we continue to defer the issue of the spirit of the earth, the advancement of human life hangs in the balance. Whether the pendulum swings to the maintenance of human life or towards its gradual decay, lies in each of our hands. The choice is ours, to become fully human and actively involved with the earth, or to remain observers and spectators shunning our responsibility. We are a strong and technologically advanced culture, but we are also subject to the many facets of human nature. Hopefully, the positive and higher qualities of human nature will win out and the quality of human life, and the quality of the ecosystem of the earth will both continue to improve and flouish as man and the earth are again united in a holistic relationship conducive to the needs and natures of each.

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