1979

Philosophy and the environmental crisis: foundation for a new technological paradigm

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PHILOSOPHY AND ENVIRONMENTAL CRISIS:
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by

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Submitted in Partial Fulfillment of the Requirements
for the Senior Scholars Program

COLBY COLLEGE

1979

ABSTRACT

PHILOSOPHY AND ENVIRONMENTAL CRISIS: FOUNDATION FOR A NEW TECHNOLOGICAL PARADIGM

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This work is meant to provide an analysis of some of the basic philosophical considerations which will have to be made in order to effect the favorable resolution of an environmental crisis.

I begin by defining what I mean by "environmental crisis" and what the evidence for the existence of such a crisis seems to be, though I draw no conclusions here. I examine also the concept of the "technological myth," that is, the belief that alllhuman problems can be solved by increased technology alone.

The main thesis of the work is the need for a new "technological paradigm." This is based on the assumption that applied science will be necessary for the solution to environmental crisis but that the basic issue is one of determining how to direct technology. This new paradigm must, therefore, be a "value" paradigm, for only human values can direct human behavior; science alone being "descriptive" rather than "prescriptive." This new paradigm must consist of our most basic existing moral values, those values which most or all of us hold to be the most important.

Since environmental crisis is primarily a threat to those unborn, such a crisis can probably only have meaning for us if we have reason to honor the interests of future generations. Therefore, I examine first of all why such an obligation seems absent for modern man, but conclude that without an apparent threat we simply have not been called upon yet to exercise our responsibilities. I attempt to analyze our obligation to posterity in terms of even more "basic" considerations: "justice,"

"love," "immortality," and the obligation to our children.

The remainder of the paper is devoted to exploring what some of our basic obligations to future generations are. First and foremost is probably the need to ensure the survival, the pure physical existence, of mankind. Any moral principle which pertains to future human circumstances is only reasonable if it includes the existence of moral agents for whom the principle has meaning. In order to ensure the satisfaction of future obligations, we must plan on a timescale sufficient to ensure that short-term self-interest values do not conflict with our paradigmatic moral obligations. Science tells us what we can and can not do in terms of alternative futures, though human values determine the final decision. Because of the difficulty in long-range planning there is a threat of "overplanning," planning on the basis of too many unknown variables. Consequently, probably only those moral values which we hold most dear ought to be planned for over the very long term. Finally, we must ensure that our moral obligations to future generations are instilled into modern society. Dissemination of more information will help, but morals themselves will probably have to be reinforced legally because of man's individual inability to act for long-range moral interests. Theoretically, those with the strongest moral sense ought to rule, though I recognize the inherent danger of political abuse.

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Introduction

ON THE NATURE OF AN ENVIRONMENTAL CRISIS

One finds today considerable reference to situations of "crisis:" political crisis, economic crisis, religious crisis, etc. In most such cases, however, the situations being refered to are merely those in which a person or party (often political) forsees an unwelcome change in the status quo. The intention in using the term "crisis" here, thus, is usually to elicit an aversive response in order that the change be avoided and the existing state of affairs be preserved. "Crisis" in these situations may or may not ultimately involve change. "Threat" is perhaps a better word to use here.

I propose to use a stronger definition of the term "crisis," stronger in the sense of greatly limiting the number of entities which we would want to call "crises." "Crisis," for the purposes of this paper, will refer to situations in which change is unavoidable; there can be no continuance of the status quo. A crisis is a turning point for "better" or "worse," threatening something which

is held to be very precious. Unlike many threats, however, ignoring the situation can not make the threat go away. In fact, ignoring a crisis can only make things worse. Something else considered to be valuable must always be sacrificed in order to resolve a crisis for the better. To face a crisis is to approach a fork in the road by which we may veer right or left, the only thing certain being that we cannot continue straight ahead. Is there, then, such an "environmental" crisis and what might be the penalty for ignoring it?

It is common to hear today of "the environment." Properly understood, can the term "environment" really be used coherently as a simple noun; in and of itself? How would most persons probably go about defining "the environment?" They would probably begin by listing compnnents such as trees, mountains, clouds, ants, etc. Then, would it not be fair to inquire whether these persons might not be equating "environment" with "nature?" But, without further qualification, "environment" and "nature" are not necessarily synonomous, at least for practical purposes. "Nature" can clearly be used as a noun; the term refers to something which is probably intelligible in and of itself. An "environment" is an environment <u>of</u> something. It is "the circumstances, objects, or conditions"[1] in which something is to be found. An entity gains meaning for us in terms of its environment. The more of its

environment we are familiar with, the more about it we know. Since ecologists tell us that everything is involved in an intricate, interrelated web of cause and effect (Barry Commoner: "Everything is connected to everything else."[2]), there is perhaps some sense in which we can speak of "the environment" as "nature." In that sense, in order to really "know" something we would have to know everything, whatever that might mean. Generally, though, we are satisfied to know as much as possible about the most immediate and influential aspects of an object's environment, to the extent that these relate to our purpose for wanting to know about that object in the first place.

In order to become familiar with "the environmental crisis," then, it becomes necessary to stipulate the entity whose environment we are concerned with. I think that most people would agree that we are concerned first and foremost with the environment of man. There are certainly incidents of concern for the environment of the bald eagle for the bald eagle's sake or for the environment of the African elephant for the sake of the African elephant, even among human beings. Nevertheless, it is probably safe to say that for most of us concern for the general interests of any other species will probably be overridden by concern for the general interests of mankind, if a real conflict should arise.* The

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* This is not to say that the general interests of other

environmental crisis, as commonly refered to, is primarily a human crisis, a crisis caused by the way man affects and is affected by certain aspects of his environment.

Any human problem, not purely existential in nature, can probably be refered to as "environmental." Nevertheless, "the environmental crisis," as that term is standardly used, can normally be subdivided into three major problem areas. These would be: 1) overpopulation, 2) depletion of natural resources, and 3) pollution. These catagories are quite obviously interrelated and any one can probably not be sufficiently understood without an adequate understanding of the other two. Nevertheless, I shall briefly review each one separately. In addition, I shall add a fourth which, though not always included in this list, perhaps threatens the most serious environmental catastrophe. I am refering to the proliferation of nuclear weapons.

Speculations on the dangers of overpopulation on a global scale are as old as Thomas Robert Malthus (1766-1834); based on very simple principles:

> That population cannot increase without the means of subsistence is a proposition so evident that it needs no illustration.
>
> That population does invariably increase where there are the means of subsistence, the history of every people that have ever existed will prove.

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species need necessarily conflict with the general interests of mankind. Indeed I think that ought rarely to be the case, though it is, of course, at the present time.

> And that the superior power of population cannot be checked without producing misery or vice, the ample portion of these too bitter ingrediants in the cup of human life and the continuance of the physical causes that seem to have produced them bear too convincing a testimony.[3]

Modern technology has done much to stave off massive starvation in much of the world, including the miraculous results of the latter day "Green Revolution." Nevertheless, population continues to grow at an alarming rate so that The Limits to Growth, researched by a team of M.I.T. scientists aided by a computer, can prophesy that:

> For the moment we can safely conclude that because of the delays in the controlling feedback loops, especially the positive loop of births, there is no possibility of leveling off the population growth curve before the year 2000, even with the most optimistic assumption of decreasing fertility. Most prospective parents of the year 2000 have already been born. Unless there is a sharp rise in mortality, which mankind will certainly strive mightily to avoid, we can look forward to a world population of around 7 billion persons in 30 more years. And if we continue to succeed in lowering mortality with no better success in lowering fertility than we have accomplished in the past, in 60 years there will be four people in the world for every one person living today.[4]

Can this many people be adequately fed, clothed, and sheltered, not to mention having their natural and unnatural wastes disposed of? Even more, can we possibly expect to provide an exploding population with a standard of living which we as Americans consider at least "humane" and for which the underdeveloped world is screaming; housing, electricity, plumbing, automobiles, etc.? This cannot be

fully understood unless contemplated in the light of the next paragraph, but I think that it is safe to agree with William Ophuls when he states:

> In sum, although the specific terms of the food-population calculus have changed since Malthus first put forward his "dismal theorem" in 1798, the prospects for a species whose fertility continues to outrun its means of sustenance is still unrelievedly dismal.[5]

Depletion of natural resources has probably been the most noteworthy environmental issue for Americans in recent years. The so-called "energy crisis" has demonstrated that we cannot necessarily go on treating all of our mineral resources as if they were endless or unlimited. It is ultimately not dollars but the sun and earth which provide energy, and that may not be as much as we want. Ophuls sums up the results of a systems analysis exploring the availability of mineral resources:

> The case is clear. Almost half the static reserves are less than 100 years, the average growth rate is about 3 percent, the doubling time is 23 years, and the exponential reserve figures indicate that just over half of these major minerals will be exhausted in less than 50 years at current growth rates.[6]

This is not to mention the so-called "renewable resources," such as forests and wildlife, and most importantly food. Konrad Lorenz, in a critique of modern man, reveals that:

> The farmer knows something that the whole of civilized mankind seems to have forgotten, namely, that the resources of life on our planet are not inexhaustible. In the United States, it was only after wide expanses of plowland had been eroded through ruthless exploitation of the top soil, after large districts had been devastated by

> timbering, and countless useful animal species had become extinct that these facts gradually began to be realized again, particularly because many large agricultural, fishing, and whaling industries began to feel the effects financially. Nevertheless, the truth has only begun to penetrate to the consciousness of the general public.[7]

Isn't it perhaps time to worry about what some of these rising prices might really signify?

Pollution, really, is simply another form of resource depletion, though while we could survive without iron ore or crude oil (theoretically, at least) we certainly could not survive without clean air, water, and soil. In recent years, in particular, man has desecrated his own environment to the extent of making large segments of it useless or even dangerous to himself. The environment can simply not absorb everything we might want to put into it. Rachel Carson was one of the first to make this a genuine aspect of the twentieth century consciousness. Her book Silent Spring, a polemic on the modern use of herbicides and insecticides, states:

> How could intelligent beings seek to control a few unwanted species by a method that contaminated the entire environment and brought the threat of disease and death even to their own kind?[8]

The fact we have to realize is that we ultimately must live in our own mess if the environment is unable to dispose of it. Much of the increase in pollution is due to the increase in population; more demand requires more technological output creating more pollution. However,

many of the most serious pollution problems are in the United States, a country not particularly heavily populated by relative world standards. Barry Commoner explains:

> The chief reason for the environmental crisis that has engulfed the United States in recent years is the sweeping transformation of productive technology since World War II. The economy has grown enough to give the United States population about the same amount of basic goods, per capita, as it did in 1946. However, productive technologies with intense impacts on the environment have displaced less destructive ones. The environmental crisis is the inevitable result of this counterecological pattern of growth.[9]

The pollution process is further complicated by a time lag factor, making it difficult to predict the future effects of present day pollution. The Limits to Growth explains that:

> This ignorance about the limits of the earth's ability to absorb pollutants should be reason enough for caution in the release of polluting substances. The danger of reaching those limits is especially great because there is typically a long delay between the release of a pollutant into the environment and the appearance of its negative effect on the ecosystem.[10]

One can only imaging what might happen if this "counter-ecological pattern of growth" were spread to the under-developed world with its massive population.

All three of these environmental problems have at least one factor in common. They all involve growth, an increase in the quantity of people, products, and waste. In most cases, the growth of growth itself is involved. This is called "exponential" growth: "A quantity exhibits

exponential growth when it increases by a constant percentage of the whole in a constant time period."[11] Accelerated growth causes social problems of its own but the real "environmental crisis" of which I have been speaking occurs when limits to growth are encountered. Resource and absorption demand cannot be greater than the environment's capacity to provide such. If the earth is essentially finite it would seem that in the face of increasing demand that the earth must eventually run out. If that is indeed what is now happening we are surely in grave peril; in fact we are in crisis. We have become dependent upon a growing economy while much of the world is still trapped in spiraling population growth. If we allow the earth's limits to be reached serious consequences will certainly follow.

Those consequences are often speculated in great detail but they all point to the same thing, the collapse of human civilization. As The Limits to Growth summarizes: "The basic behavior mode of the world system is exponential growth of population and capital, followed by collapse."[12] Collapse will be, aside from anything else, at least the end of those modes of growth upon which much of our present day civilization is based. The Limits to Growth can thus conclude:

> We can thus say with some confidence that, under the assumption of no major change in the present system, population and industrial growth will

> certainly stop within the next century, at the latest.[13]

Blueprint for Survival, based upon the findings of The Limits to Growth, paints the possible consequences of an environmental crisis in a little more detail, taking heed of the fact that a crisis is not necessarily a hopeless situation:

> The principal defect of the industrial way of life with its ethos of expansion is that it is not sustainable. Its termination within the lifetime of someone born today is inevitable- unless it continues to be sustained for a while longer by an entrenched minority at the cost of imposing great suffering on the rest of mankind. We can be certain, however, that sooner or later it will end (only the precise time and circumstances are in doubt), and that it will do so in one of two ways: either against our will, in a succession of famines, epidemics, social crises, and wars, or in the way we want it to- because we wish to create a society that will not impose hardship and cruelty upon our children- in a succession of thoughtful, humane, and measured changes.[14]

Note the inevitability of change characteristic of a crisis situation. If the future of mankind is allowed to take a turn for the worse that change will involve massive death, probably societal chaos for any still living, along with the ultimate possibility of total human extinction. A conscious effort to avoid collapse may offer us in the future an improved quality of life, though that quality will not consist in the number of material possessions owned or the number of children reared. To be aware of an environmental crisis and not choose for a better future is most certainly to choose for collapse.

Yet there are those who explicitely deny the existence of an environmental crisis. How is this possible? Few responsible persons would deny that the environmental problems to which I have refered do not, at least to some degree, exist. Likewise, noone can reasonably deny that we live on a finite planet. The earth is a sphere with a fixed diameter encased by an atmosphere of varying but limited thickness. Therefore any resources possessed by the earth are there in a fixed quantity. The debate does not center around the validity of these facts but around their meaning and importance.

Despite these facts an author such as John Maddox, writer of The Doomsday Syndrome, expresses the opinion that:

> ...in spite of the pace with which resources are now being exploited, it is a telling paradox that the present seems to be a time when materials are becoming economically more plentiful, not more scarce. Techniques for exploration for and extraction of metals seems to have kept ahead of scarcity.[15]

Unless the question of finite resources is entirely ignored, which has been the general policy until very recently, anti-environmental crisis arguments of the type Maddox proposes tend to take one of two positions. They may extend the timespan before which the majority of our vital resources become scarce so as to make worrying about it as absurd as worrying about the draining of the sun. Persons of this persuasion tend to argue for the existence of vast amounts of undiscovered resources. As economists they

tell us that as scarce resources become prohibitively expensive it will become profitable to utilize resources which otherwise would not have been feasible. In addition, improved technology will not only make the utilization of these raw materials more efficient but will also control pollution. There are also arguments that the population explosion is beginning to reverse itself as fertility rates begin to drop, making use of difficulties in accurately predicting future population trends, admitted by Commoner himself:

> The scientific evidence regarding the <u>future</u> course of world population growth is by no means unambiguous or conclusive. Any conclusion relevant to the future represents an extrapolation from past trends. Depending on the past data that are chosen as a base, strikingly different extrapolations can be made.[16]

The other solution to our present environmental problems utilizes the traditional concept of the new frontier. With most of the earth becoming inhabited and exploited the most reasonable response, for this group, is to make use of resources beyond our own atmosphere. The proponents of this theory envisage mining the planets and constructing huge space stations to be placed in orbit around the earth or sun. A limitless population could be supported, the standard of living could continue to increase with an expanding economy, and waste products could simply be pumped into space. According to this group, what was science fiction for our parents is reality today. Why

couldn't this trend continue? Both this and the economic argument are supported by learned and responsible men and certainly ought not to be ignored.

But there is another group with less faith in the ability of modern civilization to deal with environmental problems. As Maddox refers to this group:

> Prophets of doom have multiplied remarkably in the past few years. It used to be commonplace for men to parade city streets with sandwich boards proclaiming "The End of the World Is at Hand!" They have been replaced by a throng of sober people, scientists, philosophers and politicians, proclaiming that there are more subtle calamities just around the corner.[17]

This group is also composed of learned and responsible men. All rebuttals directed to those who would deny environmental crisis rest primarily on the argument that those persons have been deluded by a"technological myth." John Black writes:

> To attempt to find an answer to the present ecological crisis in terms of more and improved technological intervention is illusory. It may solve this crisis, perhaps the next and the few following ones, but it fails to recognize that the situation arises directly from our attitude to the world and what we are to do with it. Improving the <u>means</u> of interfering with natural processes may alleviate the worst excesses of our civilization as a temporary measure, but the greater our powers of intervention, the greater the risk of final breakdown.[18]

"The technological myth" performs a fallacy of composition; what was previously true may no longer apply to the present situation. Subscribers to the technological myth place their faith in human technology which has solved most of our major problems in the past and ought, therefore, to continue solving most of our major problems in the

future, including environmental problems. Man is an inveterate problem solver and has solved almost every serious problem to date, aided by technology. Why should he not continue to do so? This is analogous, according to the "doomsdayers," to my stating that because I have overcome all sickness in my life to date that I shall, of course, live forever. The analogy is not perfect for while the human body must eventually die we hope that human civilization need not. Nevertheless, the point is clear. There is no reason to believe that technology will circumvent environmental crisis. Indeed modern technology adds to the chance of environmental crisis, gobbling up resources and spewing out waste. The Limits to Growth shows that increased technology alone will not avert collapse:

> We have shown that in the world model the application of technology to apparent problems of resource depletion or pollution or food shortage has no impact on the essential problem, which is exponential growth in a finite and complex system. Our attempts to use even the most optimistic estimates of the benefits of technology in the model did not prevent the ultimate decline of population and industry, and in fact did not in any case postpone the collapse beyond the year 2100.[19]

The new space frontier is probably not an answer either simply because of the massive amount of resources such an undertaking would require, especially at a time when Americans are reluctant to put dollars into the space program as it now exists. Even if such a program were feasible now it is likely that by the time mankind came to realize its predicament on earth it would no longer

be an option. Garrett Hardin is probably correct when he says:

> We spent something like $30 billion to get to the moon, 239,000 miles away. It was a magnificent technological achievement. But in the end, the principle product of the Space program may prove to be a deepened understanding of our situation here on earth. We may come at last to feel in our bones that the earth is truly finite, and not very big at that; and that we must learn to use it without destroying it.[20]

Certainly we cannot do without technology; that is not the point. Better birth control procedures and more efficient resource utilization and pollution control, among other things, are surely needed. But that alone, as The Limits to Growth pointed out, is not enough to avoid ultimate collapse. We must come "to feel in our bones" that the earth and her resources are indeed limited.

What makes the environmental crisis even more dangerous, whether or not the doomsdayers are premature concerning the ultimate limitations within which we have to live, are the dangers which simple short range scarcity and localized over-population can bring to the relationships within our human environment or civilization. Inequality in the distribution of presently available resources is a fact, as expressed by Lester Brown in World Without Borders:

> In effect, our world today is in reality two worlds, one rich, one poor; one literate, one largely illiterate; one industrial and urban, one agrarian and rural; one overfed and overweight, one hungry and malnourished; one affluent and consumption-oriented, one poverty-stricken and survival-oriented.[21]

Despite claims to the contrary, this situation on the

worldwide level is not getting any better, as pointed out in The Limits to Growth:

> Since industrial output is growing at 7 percent per year and population only at 2 percent per year, it might appear that dominant positive feedback loops are a cause for rejoicing. Simple extrapolation of those growth rates would suggest that the material standard of living of the world's people will double within the next 14 years. Such a conclusion, however, often includes the implicit assumption that the world's growing industrial output is evenly distributed amongst the world's citizens. The fallacy of this assumption can be appreciated when the per capita economic growth rates of some individual nations are examined.[22]

Ultimately, in the face of the present growth rate, everyone will lose with the advent of civilizational collapse. Nevertheless, this inequality alone carries within it the seeds for a much more abrupt end to modern man.

As the competition for resources becomes stiffer, and there are already signs that this is happening, the opportunity for human violence to show itself may, too, increase. War is generally considered to be primarily a social problem; however, when nuclear weapons are coupled to this social problem the potential for an environmental problem of catastrophic proportions arises. The situation is described by Barry Commoner:

> There is a final threat to ecological survival that hardly needs to be documented here-nuclear war. A decade ago, the military and their supporters could still pretend that victory was possible in a nuclear war. In the face of repeated evidence by the independent scientific community, led by Linus Pauling and others, the pretense was maintained for a while. Now although the nuclear threat to survival is acknowledged, the United

> States and presumably other nuclear powers are in a constant state of readiness to launch a suicidal war.[23]

Political systems which carry the potential for alleviating an environmental crisis, also threaten to bring about this ultimate catastrophe. Not only do overpopulated, underdeveloped nations now possess nuclear capabilities but even terrorist groups now, theoretically, have access to "the bomb." Nationalism, fostered by scarcity, may result in mankind's terminal collapse. Robert Heilbroner, in The Human Prospect fears that:

> The continuing likelihood of war enters the human prospect not alone by virtue of the life-or death risks it offers, but also as a principal reason for the continuation of nation-states as the dominant mode of social organization. The latter, in turn, gives unhappy assurance that nationalism, with all its potential for historic calamity, will be encouraged by the persisting realities of international existence-the omnipresent threat of war justifying the need for nation-states; the presence of nation-states in turn setting the stage for a continuance of the threat of war. From this vicious circle there is at present no escape...[24]

Robert Heilbroner opens The Human Prospect with the question: "Is there hope for man?" Perhaps there is no hope, no choice for the future. Collapse and maybe even extinction might be inevitable. If, indeed, we have reached that point we are no longer at the point of crisis but on the threshholds of certain disaster. Perhaps this ought to be so. We speak of our present human civilization as being somehow "unnatural" and yet, can this be so? Is not one of the basic tenets of ecology that man is a part of nature? Therefore does it not

follow that his actions are "natural?" Barry Commoner's third law of ecology is that:"Nature knows best:" "Stated baldly, the third law of ecology holds that any major man-made change in a natural system is likely to be detrimental to that system."[25] Nevertheless, perhaps what we consider detrimental to a natural system or to ourselves is but a working of nature's laws. It may be a simple fact of nature that man's dominion over the earth's resources is at an end. Our demise may be "ordained," not by God but by nature.

Be that as it may, this certainly provides no principles upon which to guide our lives. I believe that there is still rational hope that an environmental crisis can be resolved to produce a better world. At least we must act as though there are alternatives and hope that we are right. This is not to mean that hope should take the place of deliberate action. Changes will come in a crisis whether for the better or for the worse and as The Limits to Growth states: "It is important to realize, however, that the longer exponential growth is allowed to continue, the fewer possibilities remain for the final stable state."[26] In addition I agree with Nicholas Rescher that we are faced with a totally new situation calling for a totally new response. None of our options for the future includes "going back:"

> I want to propose the deeply pessimistic suggestion that, crudely speaking, the environment has had it and that we simply cannot "go home/again" to "the good old days" of environmental purity. We all know of the futile laments caused by the demise of the feudal order by such thinkers as Thomas More

> or the ruralistic yearnings voiced by the romantics in the early days of the Industrial Revolution. Historical retrospect may well cast the present spate of hand-wringing over environmental deterioration as an essentially analogous-right-minded but utterly futile-penchant for the easier, simpler ways of bygone days.[27]

Intelligent persons are still debating whether such an "environmental crisis" really exists? I have nothing new to add here. That is why I have confined my remarks on the actual existence of an environmental crisis to an introduction. Nevertheless, I begin this paper with the assumption that an environmental crisis is a serious possibility, which I hope I have demonstrated here. The implications of an environmental crisis, I believe, are simply too serious to be ignored, for we may not know for certain whether an environmental crisis ever existed until the consequences are upon us. But by then it may be too late.

Chapter 1

WHY THE PHILOSOPHERS?

Science, as the process of interpreting phenomena in mutually understandable terms, or as the body of that knowledge so stated, can not solve an environmental crisis. In the same way that it cannot, in and of itself, formulate the solution to an environmental crisis, science, equally, cannot be the cause of such a crisis. The objects of science, so defined, are matters of empirical observation and scientific method is the attempt, by the process of inductive reasoning, to establish new theories or verify existing theories of "objective reality." Until successful, those objects cannot be utilized for establishing further scientific knowledge. In short, science "describes" reality. The corrollary to this is, therefore, that to the extent any discipline, be it a member of the so-called natural, or, so-called, social sciences, successfully classifies empirical data into accepted theories of reality, it is engaging in the practice of "science." The point I want to make, above all others, is that science, of itself, is descriptive

rather than prescriptive, attempting to describe what really is rather than prescribe what ought to be.

I repeat, science, thus defined, cannot solve an environmental crisis, indeed cannot solve a crisis of any kind. A crisis, as pointed out earlier, refers to an inevitable turning point for better or worse. For this reason, a scientific classification of an environmental crisis (which is what I attempted to provide in brief form in the introduction), while a worthwhile and even necessary endeavor towards the resolution of that crisis, can not and will not bring about changes in the status of the crisis. A solution, here, involves a decision, in this case for the choice of and action towards a "better" future. A decision, here, therefore, involves prescribing that definition and course of action. Science, however. as stated above, can only describe what actually is, not prescribe what ought to be.* John Dewey, in his Theory of Valuation, testifies to the fundamental problem facing those who attempt to maintain a purely scientific stance towards environmental issues:

> ...one is at once struck by the fact that the sciences of astronomy, physics, chemistry, etc., do not contain expressions that by any stretch of the imagination can be regarded as standing

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* Logic, too, therefore, as a process to determine coherence in terms of the fundamental principles of human thought, cannot, any more than science, which, indeed, utilizes the rules of logic, prescribe what ought to be. It alone, then, cannot provide the solution to an environmental crisis either.

> for value-facts or conceptions. But, on the other hand, all deliberate, all planned human conduct, personal and collective, seems to be influenced, if not controlled, by estimates of value or worth of ends to be attained.[1]

A crisis, by definition, threatens values not scientific facts. This is not to say that the "facts" are not sometimes influenced by the values but that, even for this reason in itself, it is important to realize that a correct understanding of and resolution for an environmental crisis will require dealing with human values. The scientist can go nowhere towards solving an environmental crisis without guidance from the philosopher.

The first problem is to decide what it means to be or possess a "value." This, in itself, is not an easy task. As a value theorist, Harold Osborne has written, and I think rightly so, that:

> ...an application of the principle of "dictionary" definition showed that the rival theories about Value embody different conceptual definitions of different ideas and not different attempts conceptually to define the same idea. The philosophers are not mistaken about the nature of the same thing "Value", but are mistaken in thinking that they are trying to define the same thing; whereas they are successfully defining different things.[2]

Being so forewarned, rather than entering the arena in a misguided attempt to defend the "true" and "definitive" meaning of the term "value," I shall instead stipulate the way in which I intend to use that term for the purposes of this paper and assume that that definition, so stated, merits the importance I have given it in

relation to the problem at hand.

The "value," or "worth," of something refers to the result of a process whereby that object of interest is ranked, by some valuing agent, of more or less importance towards making some decision. That importance is calculated in relation to the importance of some other object or objects in terms of the situation in which the decision must be made. For our purposes values are only relevant insofar as they are capable of determining behavior, either actually or theoretically. A value is the "preference," when compared with alternatives, by which any course of action must be determined. In other words, any decision to act is based on a value or values by which that course of action is, itself, "prefered" or "valued" above all others. Values, then, are the reasons for deliberate action. For example, I may decide to paint my house orange, that being my favorite or "prefered" color among the many possible choices for house paint. My neighbors may, however, detest orange as the color for a house. Therefore, because I value my relationship with my neighborhood more than what color I paint my house, I may decide to choose my second favorite color, blue, as preferable, all things considered. The act of actually painting the house blue follows from a decision based on all of these relevant values.

What are the implications of stating that science is free of values so defined? To assert that science, as I

have been speaking of it, does not admit of degrees of worth or relative importance is to deny the freedom of the scientist to pass judgement on the objects of his scientific interest, namely empirical data and theories. He may only determine the consistency of that data with those theories according to preestablished rules of inductive and deductive reasoning, which are themselves value-free. The validity of a scientific theory is not in any way affected by the behavioral decisions made by the scientist based upon any aspect of that theory* (unless, of course, the theory is meant to predict or explain the behavior of scientists under certain situations). It is only the validity of that theory which is important to science itself.

It may be granted that certain generally recognized rules of scientific procedure are accepted as "valuable" though without in any way affecting the validity or internal consistency of a scientific theory. Such criteria as fertility, simplicity, and elegance are considered important for relating a theory to others and for assuring that the theory itself will be comprehensible to other scientists,[3] while ignoring them cannot, of itself, invalidate a theory (though doing so could make science a very difficult

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* Caution!: This is not to assert that scientific theories are not affected by the values of scientists (i.e. which theories actually come into being), only that the validity thereof is not affected when tested properly.

endeavor). These values affect the quantity though not the "quality" of science, the truth value. The definition of science probably does not make it manditory to "know" as much as possible. Therefore, because such value considerations are not, at least logically, necessary aspects of scientific procedure they are probably better designated the values of scientists rather than scientific values.

As a matter of fact, values, as I have defined them, can themselves be known and analyzed according to scientific criteria. Values of individuals or societies, as demonstrated in behavior, can be classified according to type and examined in terms of motivation or expression. Such is indeed the function of the behavioral sciences or the descriptive aspects of psychology, sociology, or anthropology.

Science can, therefore, predict values but cannot, as I said earlier, prescribe values. Science cannot dictate how we should act but only how we have acted or might act (both in the sense of options and odds). The economist E.F. Schumacher in his critique of modern economics, Small is Beautiful, reiterates this point:

> Science cannot produce ideas by which we could live. Even the greatest ideas of science are nothing more than working hypotheses, useful for special research but completely inapplicable to the conduct of our lives or the interpretation of the world.[4]

Errol E. Harris, in an essay entitled "Reason in Science and Conduct," also summarizes the problem encountered by the scientist and logician attempting to devise a solution to something of the nature of an environmental crisis. He indicates, in the process, the route by which such a solution needs probably to be sought:

> The reduction of reason to a purely formal instrument and the belief that substantive knowledge can be derived only from sensuous observation produces a complete revolution in attitudes to morality and political ideals. For pure intellectual analysis is indifferent to good and bad, right or wrong, and provides no motives for action. Even Aristotle, who venerated reason, declared that pure intellect moves nothing. Moreover, qua purely analytic, it cannot be the source of any constructive conception of human nature.[5]

Science, understood in this manner, can describe what nature or human values are, but the scientist, using only those tools provided by proper scientific procedure, can not determine what he might want nature or human values to be as opposed, perhaps, to what they actually are. He certainly can not decide what nature or human values "ought" to be in any kind of ethical sense. "Ought" for the scientist merely describes the high statistical probability of the occurrence or existence of an event or state. "Ought" for the moral philosopher denotes something very different.

"Moral value" presents the same sort of problems

in definition that were encountered with the more general term "value." Nevertheless, in a similiar approach to Harold Osborne's assessment of the situation with respect to "values," C.H. Whitely, in his article "On Defining 'Moral'," explains:

> While there are many principles, attitudes, problems which everybody would agree in not calling "moral", there are large numbers of doubtful cases, and no generally accepted criteria for drawing the line. Thus a reasonably exact definition must depart from usage to some extent. Such a definition should not be judged as correct or incorrect; it should be judged as suitable or unsuitable.[6]

An "ethic" or "morality" postulates or prescribes for some person or group "moral values." "Moral value," for the purposes of this paper, shall stipulate that species of value, as previously defined, which carries with it an "obligation" on the part of the valuing agent to behave as morally prescribed. An "obligation" is a command to action; the "obliged" is bound to a certain form of behavior, theoretically without question (except perhaps in the case of a conflict of obligations). This is true whether or not the valuing agent would otherwise have similiarly behaved according to some criteria of prudence or self-interest. A "moral value" is what Kant describes as:

> ...an imperative which commands a certain conduct immediately, without having as its condition any other purpose to be attained by it. This imperative is categorical.[7]

As stated earlier, it is the most important or prefered values which guide conduct. The claim is, then, that moral values "ought" to be the most important or prefered values.* This is, of course, not always the case or moral values would never have been isolated from general value considerations as they have been. There are certainly countless cases of persons professing high moral standards who, nevertheless, upon occasion, behave "immorally." Behaving immorally consists in setting a self-interest value above, or more important than, a moral value and behaving accordingly.

Moral values, therefore, are rather difficult to distinguish empirically from any other value considerations, at least in other persons. One possible distinction, apart from verbal assurances, is evidence of guilt or remorse if moral values are violated, that is, if self-interest values are placed above moral values. In terms of a moral obligation we speak of being "bound to the conscience." As its sanction, therefore, we feel guilty. Unless such guilt can be generated it is impossible to convince someone that they have behaved immorally.

I am in general agreement with W.K. Frankena when he says that:

> ....morality is and should be conceived as something "practical" in Aristotle's sense, i.e. as an activity, enterprise, institution, or system-all of these words

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* This is not to deny that some moral values are more important than others (a serious problem in Kant). That shall become more obvious later on.

> are used and it is hard to know which is best-whose aim is not just to know, explain, or understand, but to guide and influence action, to regulate what people do or try to become or at least what oneself does or tries to be.[8]

I have been infering that moral values are something which can only be imposed on the individual by himself. Nevertheless, it is common practice to prescribe morals for others. Indeed, we often encounter those who would have us live under their own set of universal moral standards, intending to prescribe behavior for human beings in general. It does not, of course, follow that we need make anyone else's moral standards our own, i.e. we need not feel guilty if we break their moral code. Nevertheless, as the phibsopher Frederick Olafson points out:

> Usually...ethics is assumed to have a special interest in those values that have a bearing on human action and propose a goal for human effort; it is natural, therefore that questions about the summum bonum-the good for man-should be of primary importance for ethical thought.[9]

To presuppose the existence of moral values which are "the good for man" is to presuppose that all men ought to behave in certain ways. The upshot of this is that we feel morally obligated to impose our moral values on others.

In terms of searching for those moral values which would constitute "the good for man," I agree with John Passmore's insistence that:

> ...an ethic...is not the sort of thing one can simply decide to have; 'needing a new ethic' is not in the least like 'needing a new coat'. A 'new ethic' will arise out of existing attitudes, or not at all.[10]

This is easy to see since the search for "a new ethic" which

would constitute "the good for man" presupposes "existing attitudes" which question the old ethic, or lack thereof, upon which the new ethic would have to be founded.* As stated earlier, crisis involves a conflict of values. The problem is to determine which values to retain and which to abandon, since all cannot be maintained simultaneously. I shall argue that basic moral considerations, values which would probably be satisfactory to anyone with some moral sense, ought to be made in order to determine the solution to an environmental crisis. Probably only in this way can potentially disastrous, and immoral, consequences be avoided. Clearly this is the role for the philosopher to play, be he perhaps also a scientist, in an environmental crisis.

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* This is not to assert that moral values cannot (for the amoral) be instilled or at least enforced (for the amoral and immoral). (See Chapter 6) I am merely saying that those who would do this must first come to some agreement, based on their existing attitudes, as to what those moral values ought to be.

Chapter 2

VALUES AND THE NEED FOR A NEW TECHNOLOGICAL "PARADIGM"

In response to the last chapter I might well ask: But can an environmental crisis be solved without science? As I think has already been demonstrated, science alone is not sufficient to resolve a crisis. Science, by itself, lacks a call to action which is the foundation for human behavior. However, this is not the question, the question being, rather: Is perhaps science a necessary component for the solution to an environment crisis? Clearly, I think, man as a social animal could achieve nothing without science. Science is, and always has been, an integral part of man and his society. Indeed, we could hardly communicate with one another without some sort of mutually understood, or scientific, groundwork for human language. Certainly we could have no conception of environmental crisis without the scientists. Science must set the scene in which values must determine the decisions.

In reality, science can never be divorced from human values. To this point I have defined science apart from

values in an abstract sense. In practice, however, this can never really be done. All human endeavor is value-dependent. As already stated, to give reasons for human behavior is to refer to human values which direct that behavior. To decide to do something is to weigh value options and to guide one's conduct accordingly. Science is clearly a human endeavor involving the deliberate behavior of those human beings who are scientists.* That science is done means that it is done for reasons of value therefore making science value-dependent.

Nevertheless, science is intended to solve problems not in the sense of value conflicts but rather problems in the sense of what the philosopher of science Thomas Kuhn defines as "puzzles:"

> Puzzles are, in the entirely standard meaning here employed, that special category of problems that can serve to test ingenuity or skill in solution. Dictionary illustrations are "jigsaw puzzle" and "crossword puzzle"... It is no criterion of goodness in a puzzle that its outcome be intrinsically interesting or important. On the contrary, the really pressing problems, e.g., a cure for cancer or the design of a lasting peace, are often not puzzles at all, largely because they may not have any solution.[1]

In other words, the scientists decide what puzzles to tackle on the basis of their values but the solutions to the puzzles themselves are preestablished (though

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* I use the term "scientist" here loosely, not referring necessarily to any specific group of professionals but rather to anyone who engages in a process of interpreting phenomena in mutually understandable terms.

perhaps not yet discovered), admitting of no human decision or choice as to what that eventual solution will be. The solutions to puzzles must be described, not prescribed. It is in this sense that we speak of science as value-free.

Where do puzzles come from? What criteria determines that a question may legitimately be termed a puzzle? Thomas Kuhn is noted for his recognition, in science, of the role of "paradigms:" "universally recognized scientific achievements that for a time provide model problems and solutions to a community of practitioners."[2] Puzzles are chosen in terms of paradigms and the criteria for selecting scientific problems, or puzzles, in terms of an operating paradigm can tend to preclude issues of the magnitude of an environmental crisis from the scope of, what Kuhn terms, "normal scientific research." He explains this as follows:

> We have already seen, however, that one of the things a scientific community acquires with a paradigm is a criteria for choosing problems that, while the paradigm is taken for granted, can be assumed to have solutions. To a great extent these are the only problems that the community will admit as scientific or encourage its members to undertake. Other problems, including many that had previously been standard, are rejected as metaphysical, as the concern of another discipline, or sometimes as just too problematic to be worth the time. A paradigm can, for that matter, even insulate the community from those socially important problems that are not reducible to the puzzle form, because they cannot be stated in terms of the conceptual and instrumental tools the paradigm supplies.[3]

The conclusion from this, therefore, is that there exists no paradigm which makes the solution to an environmental crisis obvious and thus no readily available "conceptual and instrumental tools" with which to tackle the issue. In order to apply science to environmental crisis, then, the environmental crisis must first be turned into a puzzle. To turn environmental crisis into a puzzle requires the discovery of a paradigm which makes it identifiable as such.

It would probably be useful here to introduce the distinction between "theoretical" and "applied" science. As already stated, science, as a human endeavor, is value dependent in terms of the reasons for which the scientific research is pursued. It is in terms of these reasons, or goals, that these two types of science can be distinguished. While the actual research scientist may work primarily to make money or because he likes to solve puzzles it is normally reasonable to ask why he is being paid or supplied with puzzles. Theoretical science has as its goal the acquisition of knowledge in order to satisify human curiosity and nothing more. We call this "knowledge for its own sake." Applied science, on the other hand, has as its goal the solution of human problems, that is, the achievement of valued states of being. Most scientific research falls in this category. Therefore, to the extent that science solves problems which are not simply a lack

of knowledge we may call it applied science, or the term more commonly used, "technology."

As pointed out in the introduction, it is the prevailing opinion of many persons that technology cannot solve an environmental crisis and indeed may be a principle cause thereof. A blind faith in the ability of technology to pull us through is denounced as "the technological myth." There are dangers in the interpretation of this, however, and certain implications ought to be made explicit. For example, E.F. Schumacher, I think, gives a prime example of a paragraph which might easily misrepresent the nature of environmental crisis when he states that:

> If that which has been shaped by technology, and continues to be so shaped, looks sick, it might be wise to have a look at technology itself. If technology is felt to be becoming more and more inhuman, we might do well to consider whether it is possible to have something better-technology with a human face.[4]

The dangers lie in the possible belief that technology, by itself, is somehow the cause of an environmental crisis. Only the last phrase, the possible existence of "technology with a human face," saves this paragraph from making that assumption. John Black, too, in The Dominion of Man, appears to make the same mistake when he states that: "To attempt to find an answer to the present ecological crisis in terms of more and improved technical intervention is illusory." He qualifies himself, however, when he continues:

> It may solve this crises, perhaps the next and the few following ones, but it fails to recognize that the situation arises directly from our attitude to the world and what we are to do with it.[5]

The possible misconception here is what I call "the myth of the technological myth." This concept, it seems to me, makes the implicit assumption that the primary solution to an environmental crisis involves a change in human technology apart from human values. In this case it is not more technology that is required but less or none at all. In fundamentals it makes all the same mistakes as the technological myth. I think, possibly, that Aldo Leopold best sums up my point here when he says:

> By and large, our present problem is one of attitudes and implements. We are remodeling the Alhahmbra with a steam-shovel, and we are proud of our yardage. We shall hardly relinguish the shovel, which after all has many good points, but we are in need of gentler and more objective criteria for its successful use.[6]

Why did we want to call blind faith in technology a "myth" in the first place? What is it about that situation that we want to change? The problem, as Leopold tells us, is not the technology itself but the uses towards which we as human beings put technology. It is the goals of technology which are the problem and those goals are established by human values, not by some inanimate entity "technology." I think Van Rensselaer Potter is certainly correct on this point:

> When we speak of dangerous knowledge, we have to admit at once that knowledge in itself cannot

> be inherently good or bad. What has lent credence to the concept of dangerous knowledge is that knowledge is power, and once knowledge is available, it will be used for power whenever possible. Knowledge once gained can never be left to gather dust in a library or locked successfully in a vault. No one worries about knowledge that is not used. It is the uses to which knowledge is put that make it dangerous or helpful.[7]

Much of modern technology could be considered "dangerous knowledge," and should certainly be interpreted in this sense as explained by Potter.

"Power" has developed ugly connontations in our society. We naturally assume, at least politically, that he who has power will abuse it. Hence, we are wary of too much technological control in the hands of the politicians, or those responsible for the management of our society, because that control can be used to harm us. Certainly we can't count on the scientists themselves to watch out for the public interest for as Lewis Mumford warns:

> Give the scientist his laboratory, give him his budget, give him his assistants, give him his honors, and he'll work for any government or corporation without challenging the objectives or questioning the social results.[8]

What ought to be our reaction to this? Should we attempt to pull science free from political or corporate control? Clearly, Lynton Caldwell points out, in terms of politics, this is impossible:

> Hostility to the idea of the social control of science is commonly based on the assumption that science can exist independently of a political milieu and that science, free from "political interference," can advance indefinitely even

> though politics does not undergo a commensurate improvement. The assumption that politics cannot be improved is widespread and not easily refuted. But if politics is incorrigible, it must surely be because people are generally incapable of learning from experience or of paying the social costs of scientific advancement, one cost of which is clearly a more effective management of the natural assets of society. The notion that modern science could exist totally independent of politics has no foundation in actual practice.[9]

The fact is simply that technology, because it is a human endeavor seeking the solutions to human problems, cannot proceed without some kind of guiding impetus. Technology cannot control itself; only human beings can control it. How does man determine what uses to make of technology? Rubin Gotesky, in an article "What Criteria for Scientific Choice?", explains that:

> ...scientists do not at any given time seek <u>the Truth</u>; they seek and can only seek <u>certain</u> truths; and they seek them because, in given circumstances and under given conditions, the finding of certain truths, if possible, are considered more <u>important</u> than others.[10]

But is not to consider one thing more <u>important</u> than another, by the definition we attached to the term, to determine relative <u>values</u>? Technology plays a part in environmental crisis because the values which guide technology are apparently in conflict with other human values. Clearly this is the nature of crisis. However, this need not be so, and eliminating that conflict does not necessarily mean eliminating technology. Indeed, how could technology be eliminated without recognizing the role values play in its implementation? If the dangerous consequences of

technology are caused when human values dictate the acquisition of certain technological goals, how will we ever eliminate those dangerous consequences without first altering those human values which are the primary cause? And if we could alter those values whose consequences make technology appear so dangerous perhaps we would discover that technology, as a human tool guided by more favorable values, is not so threatening after all. In summary, then: If human values which guide technology can be made better in the totality of their consequences, we probably wouldn't need to eliminate technology. If those human values can't be changed, or made better, we wouldn't be able to eliminate technology anyway.

The technological myth is, however, a very real problem if interpreted correctly. As Garrett Hardin delineates:

> A technical solution may be defined as one that requires a change only in the techniques of the natural sciences, demanding little or nothing in the way of change in human values or ideas of morality.[11]

To point out a "technological myth" is not to assert that technical solutions to environmental problems are not possible. What is asserted is that technical solutions based upon our present system of values and morality are not possible. Hardin gives an example:

> It is fair to say that most people who anguish over the population problem are trying to find a way to avoid the evils of overpopulation without relinguishing any of the priveleges they now enjoy.[12]

The root of our present environmental crisis is not technology by itself but the human values which guide technology. Only if those can be altered will a technical solution to an environmental crisis become possible. Lewis Perelman summarizes the problem involved with both the "technological myth" and the "myth of the technological myth" when he asserts that the environmental crisis: "is fundamentally a crisis of ideas rather than a crisis of things."[13]

If the environmental crisis is a crisis of ideas, or more particularly values, science can have no real role to play in its solution until the human values which determine what that solution ought to be are settled. Thomas Colwell, in an article on the implications of ecological revolution, mentions that:

> Since the consequences of our technological means have produced the ecological crisis, it follows that the ends we have followed are suspect by implication. The search for a new theory of man's relationship to Nature therefore centers around the search for a new conception of the ends and values which guide the means we employ.[14]

Along the same line William Blackstone asserts:

> If this is true, if these values and attitudes are mistaken and are the root of the problems, then we need what Friedrich Neitzsche called-a transvaluation of values. We do not need the kind of transvaluation that Nietzsche wanted, but we do need that for which ecologists are calling, that is, basic changes in man's attitude toward nature and man's place in nature, toward population growth, toward the use of technology, and toward the production and distribution of goods and services. We need to develop what I call the ecological attitude.[15]

This search for new values or goals by which to derive a scientific solution to an environmental crisis is what I shall refer to as the establishment of a new "technological paradigm."

In order to turn an environmental crisis into a"puzzle" it will first be necessary to establish a "dominant paradigm" for mankind which makes it apparent as such. Willis Harman defines Kuhn's term in such a way that, though perhaps not changing the original meaning, makes it more clearly applicable to the problem at hand. He refers to the "dominant paradigm" as: "the basic way of perceiving,thinking, and doing, associated with a particular vision of reality."[16] We have already seen that if such a "vision of reality" is to redefine an environmental crisis in scientific terms, as a puzzle for the technologists, it will have to incorporate certain human values. We tend to shun such a concept because we know from experience how difficult it is to come to agreement on what constitutes "correct" human values. Nevertheless, unless we can come to some kind of basic agreement the environmental crisis will stand insoluable, in fact for many, unseen.

Indeed I think that such a paradigm can be established. I think that there are basic moral values which are generally accepted and which, if generally respected, would clarify both the nature of and solution for an environmental crisis. The new technological paradigm

must incorporate these basic moral values allowing us to establish goals for action which are consistent always with the dominant paradigm. Our paradigm must incorporate what Potter calls "wisdom:"

> 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. Albert Schweitzer said: "our age has discovered how to divorce knowledge from thought, with the result that we have, indeed, a science which is free, but hardly any science left which reflects."[17]

Indeed, this is where the philosophers must take a bold step forward and carry the banner, for what group is better equipped to handle the question of moral values? Colwell agrees:

> In any event, the centrality of the ecological revolution stands as a clear call to philosophy to exercise its traditional role of critic and interpreter of scientific and cultural revolution. Perhaps one of the reasons for the irrelevancy of much contemporary philosophy is its failure to perform this role at the level of ecological change.[18]

Our ultimate goal, when faced with environmental crisis, is to ensure that the future is better and not worse, since these are the only alternatives offered. At least a better future must consist in the removal of that which threatens presently to make it disastrous. Hopefully a better future would consist in even more than simply a negation of present evils. If the future is to be better it must be better in relation to values which we already hold, otherwise we would have no reference point from which to value it now. If this were not true the future would merely be different, not

better. Such a future would be impossible to implement for it presents no obvious goals for which to aim technology, or human endeavor in general. This should not be surprising, for the meaning of crisis, as we have already discovered, is that there exists a conflict of values; some of them must be frustrated if others are to reach their goal. Therefore I think that Harmon may somewhat overstate his case when he maintains:

> I want clearly to distinguish what we are hypothesizing from other changes which are revolutionary in a social or political sense but do not involve transformation of the basic, implicit, unchallenged, taken-as-given metaphysic.[19]

As I stated in the first chapter, supported by a quotation from John Passmore, I believe that unless our new paradigm does not arise out of existing attitudes and values, in particular moral values, it will not arise at all. Unless the seeds for recognizing the new paradigm are not already within at least a few of us, there is no hope for its discovery and implementation. It is only on the basis of this "implicit, unchallenged, taken-as-given" moral metaphysic that we can possibly conceive of a better future in the face of an environmental crisis. Many of our present important human values, those to which Harmon is really refering, upon which we presently postulate a better future, will have to be swept aside for they will conflict with our moral paradigm.

Indeed, it is only on the basis of this new paradigm

that an environmental crisis can properly be viewed as a crisis, that is that it becomes apparent that the future must be either better or worse in terms of this most basic moral metaphysic. We must examine the coherence of all of our other values in terms of this moral paradigm. If we find them to be compatible there is no need to fear a crisis. If some of the more important values which we presently hold do turn out to threaten those basic values which we hold to be most precious, we are in trouble. I fear a proper analysis of the facts in relation to such a paradigm might very well conclude that we are indeed entering a period of environmental crisis, as might be evident from the Introduction. I can only hope that I am wrong, or if not, that mankind possesses enough wisdom to make the proper corrective measures with technology contributing to eradication rather than the promulgation of such a crisis.

Van Renssalaer Potter tells us:

> Mankind is urgently in need of new wisdom that will provide the "knowledge of how to use knowledge" for man's survival and for improvement in the quality of life. This concept of wisdom as a guide for action-the knowledge of how to use knowledge for the social good-might be called Science of Survival, surely the prerequisite to improvement in the quality of life.[20]

Walter O'Briant, in "Man, Nature, and the History of Philosophy," states:

> We need a Weltanschauung-a view of the whole-to guide us in establishing our priorities for action. Science and technology can give us the means, but religion and philosophy must delineate the ends.[21]

And Harmon asserts:

> Science in the claimant paradigm will be clearly understood to be a moral inquiry. That is to say, it will deal with what is empirically found to be good for us, in much the same sense that the science of nutrition deals with what foods are wholesome for us.[22]

All three of these men are saying basically the same thing. We need a new technological paradigm which consists in a new set of ends or goals, based on human values, towards which the technologists ought to strive. It shall probably be our ability to do this which shall determine whether an environmental crisis, if such should exist, goes unsolved or not. As Robert Heilbroner states:

> For the gravity of the human prospect does not hinge alone, or even principally, on an estimate of the dangers of the knowable external challenges of the future. To a far greater extent it is shaped by our appraisal of our capacity to meet those challenges.[23]

In what such a new technological paradigm must consist shall be the topic of the remainder of this paper. For if this cannot be established, my "appraisal of our capacity to meet those challenges" shall be very grim indeed.

Chapter 3

THE OBLIGATION TO FUTURE GENERATIONS

We in the United States are already beginning, I think, to feel the pinch of environmental crisis. Clearly the symptoms which I described in the introduction have become increasingly apparent in the last 25 or 30 years, particularly pollution and resource scarcity. Other lands are much worse off, adding serious overpopulation to the list of environmental plagues. In the face of this, most Americans can still voice satisfaction with the present course of history. Yet in the event of environmental crisis the present course of history cannot continue indefinitely. If indeed environmental crisis is upon us, and if we continue to ignore that fact, disastrous consequences must inevitably follow. The suffering has already begun for most of those in Africa, Latin America, and much of Asia. The western world has been able to maintain itself so far, often at the expense of these less developed nations. The question is, however: When will the axe fall?

The answers, in terms of timescales, vary. Nevertheless, even for the most emphatic of "the doomsdayers" it is generally agreed that we still have a little time by which to live under the old values. Those now alive will probably not be the ones most seriously affected by environmental crisis, though some of us may yet live to see our present value system collapse (or change). Most of the undesireable consequences of our present actions, it is agreed, will be meted out most harshly on those generations yet unborn. This is not to preclude the fact that the widespread proliferation of nuclear arms, my fourth environmental problem (see Introduction), threatens to surprise us with environmental catastrophe at any time. This is not to preclude the fact that famine is a daily threat to a large proportion of the world's population even now. These facts only add to the threat of ultimate disaster for our future generations. The problem is, then, to decide how we ought to behave when the consequences of our present behavior may be the circumstances under which those who now have nothing to say about it must live.

Van Rensselaer Potter says:

> The survival of world civilization will be impossible unless there is some agreement on a common value system, especially on the concept of an obligation to future generations of man.[1]

We have already discussed the first clause of this statement in the last chapter and have found it likely to be true, labeling this "common value system" our new technological

paradigm. I think that the second clause of Potter's statement is an obvious addendum; indeed it must be the foundation for such a paradigm. Unless there can be established an obligation to future generations I believe that there is small hope of even identifying an environmental crisis, except as it can most immediately affect us (i.e. nuclear war, famine, etc.) In other words, since a crisis involves the valuation of future states of affairs, in this case a state of affairs in which we will probably not be living, the denial of any obligation to persons who are in fact living under those future circumstances means that the concept of environmental crisis would probably have little meaning for us, except, as mentioned, when it can be linked to more proximate hazards. What, indeed, is the status of such an obligation?

As already stated, our new paradigm must arise out of existing attitudes or it has no hope of realization. In order to establish an obligation to future generations as a foundation for a new technological paradigm it will first be necessary, then, to determine the extent to which such an obligation is considered reasonable as a human value. In other words, are we capable of thinking in terms of such an obligation?

It would appear that we might not be capable of holding such a value. As John Black explains:

> As a general rule, most of us are prepared so to manage our affairs that we and our contemporaries do not suffer; self-interest sees to that. It is the transfer of this interest in the general good of mankind to the future-particularly the remote future-that raises difficulties.[2]

In a systems analysis relating personal interests and timespan, the Meadows research team concludes in The Limits to Growth:

> A person's time and space perspectives depend on his culture, his past experience, and the immediacy of the problems confronting him on each level. Most people must have successfully solved the problems in a smaller area before they move their concerns to a larger one. In general the larger the space and the longer the time associated with a problem, the smaller the number of people who are actually concerned with its solution.[3]

Robert Heilbroner, recognizing the reality of this state of affairs queries in a bit more emphatic tone:

> When men can generally acquiesce in, even relish, the destruction of their living contemporaries, when they can regard with indifference or irritation the fate of those who live in slums, rot in prison, or starve in lands that have meaning only insofar as they are vacation resorts, why should they be expected to take the painful actions needed to prevent the destruction of future generations whose faces they will never live to see? Worse yet, will they not curse these future generations whose claims to life can be honored only by sacrificing present enjoyments; and will they not, if it comes to a choice, condemn them to nonexistence by choosing the present over the future?[4]

Clearly, based on the manner in which we normally go about placing values on things, we find it very difficult to evaluate very far into the future. It is difficult to value something, as in the case of future generations, to which so much uncertainty is attached. It is difficult

to hypothesize too far into the future for the farther we go the less sure we can be that what we are thinking of will ever be realized; or similiarly, we see only a haze with nothing clearly distinguishable to put our finger on. In terms of future generations, then, as Black states:

> It is when we look even further into the future that we find ourselves thinking not in terms of known and identifiable individuals, in whom we have a personal stake, but in an abstract, unidentifiable posterity.[5]

Likewise, Joel Feinberg says:

> The real difficulty is not that we doubt whether our descendants will ever be actual, but rather that we don't know who they will be. It is not their temporal remoteness that troubles us so much as their indeterminacy-their present facelessness and namelessness.[6]

By the same token, it would naturally appear that the less we know of some person or persons the less concern we can muster for that person or persons. Taken together, these facts make it difficult for us to actually concern ourselves with future generations. As Aldo Leopold asserts:

> The erasure of a human subspecies is largely painless-to us-if we know little enough about it. A dead Chinaman is of little import to us whose awareness of things Chinese is bounded by an occasional dish of chow mein. We grieve only for what we know.[7]

Indeed modern economic practices would seem to make concern for future generations obsolete. For one thing, it is much easier to operate without having to make future considerations. As Schumacher explains:

> To be relieved of all responsibility except to oneself, means of course an enormous simplification of business. We can recognise that it is

> practical and need not be surprised that it is highly popular among businessmen.[8]

Future man can give us nothing now and therefore can not be dealt with on normal economic terms. Concern for future generations is more than just a burden, it commits the sin of being "uneconomical." William Ophuls states that:

> ...any purely economic man must ignore the interests of posterity, for it has no agent he can bargain with in a market place and nothing of economic value to offer him. It is an economic fact that posterity never has and never will be able to do anything for us. Posterity is therefore damned if decisions are made "economically."[9]

Indeed, not only does it seem very difficult for man to concern himself with future generations; by some of our modern standards or values, it is positively wrong to do so.

Nevertheless, interestingly enough, none of those quoted so far in this chapter would deny that we did indeed have an obligation to future generations. Surely there are those who do deny that obligation, indeed on rational economic grounds. Heilbroner quotes a Distinguished Professor of political economy at the University of London as writing:

> Suppose that, as a result of using up all the world's resources, human life did come to an end. So what? What is so desirable about an indefinite continuation of the human species, religious convictions apart? It may well be that nearly everybody who is already here on earth would be reluctant to die, and that everybody has an instinctive fear of death. But one must not

> confuse this with the notion that, in any meaningful sense, generations who are yet unborn can be said to be better off if they are born than if they are not.[10]

I don't think, however, that the quoted position is the prevailing one, in our society at least. The value system upon which modern economics thrives is not all-inclusive of human concern. According to one of our value systems, then, it may not make sense to value posterity, but I am in basic agreement with John Black when he says:

> Nevertheless, it seems quite clear to me that we do concern ourselves for the future of the world. As far as I can ascertain western man always has done. It may seem irrational, for we are calling upon ourselves to make sacrifices not so much on our own account, that we may benefit from them ourselves, but for the benefit of generations as yet unborn.[11]

Heilbroner voices the same opinion, viewing the above quoted Distinguished Professor's words with skepticism:

> For it is one thing to appraise matters of life and death by the principles of rational self-interest and quite another to take responsibility for our choice. I cannot imagine the Distinguished Professor from the University of London personally consigning humanity to oblivion with the same equanimity with which he writes off its demise.[12]

The point being made by both of these men is, I think, not that we evidence a high value for posterity in all of our actions or words, but rather that, whether we necessarily realize it or not, when knowingly faced with the question of the interests of future generations, we find we do indeed have an obligation to protect at least some of those interests. The feeling of an obligation to future generations usually

only arises, however, as Heilbroner illustrates, when we must "take responsibility for our choice." In other words, it is in the act of consciously deciding for those yet unborn that our obligation becomes apparent.

We must be careful here, however. I do not mean to infer that, by itself, our "responsibility for" the future necessitates any sort of obligation. Certainly we are "responsible for" the future but we are not, because of that fact alone, thereby obliged to behave in any particular manner. To be "responsible for" something merely represents a causal relationship between the agent and the consequences of his action. To be "responsible for" something is to be the reason for its occurrence or existence, be that thing an event or a substance. It would appear that if we are presently involved in an environmental crisis, the collapse of the future civilization of man would certainly be our responsibility, in the sense that the reason for that collapse could easily be traced back to us (and, of course, to those before us). In this way, changing our present actions would change what we would ultimately be "responsible for." The Distinguished Professor could, therefore, freely admit that we are responsible for the future condition of man but could still deny that we, thereby, have any obligation to alter our behavior.

The problem, in this case, is that being "responsible for" something does not involve a value judgement, while

an obligation does. "Responsibility for" is a scientific fact; causal sequences are purely descriptive. Scientific facts are only "right" or "wrong" in terms of truth value. No manner of behavior is prescribed. We will surely be accountable to future generations in the sense that they can ask (or at least wonder) why we behaved in a manner which was the cause of their present state or situation. But they can not on the basis of our "responsibility for" their situation praise or blame us for that situation, in the sense that they would desire to reward or punish us if they can or could, unless it can be shown that we should have behaved in a way other than we did. There must have been a reason why we "ought" to have valued another course of behavior over the one we actually chose, or valued.

In order to establish an obligation, in taking "responsibility for" our choice we must feel a "responsibility to" those for whom we choose. "Responsibility to" future generations grants them the right to blame or praise us for our present actions. Only if this sense of responsibility can be established does there exist an obligation, and therefore a moral duty, to behave in a certain manner. Can we go about establishing the validity of this moral responsibility which is, I am arguing, necessary for the institution of a new technological paradigm? In other words, perhaps this obligation can be traced back to obligations even more basic than itself.

John Rawls, though unconcerned with the problem of environmental crisis in his book A Theory of Justice, does comment on the problem of determining posterity's interests. He believes that this problem, like all other social issues, ought to be dealt with according to the concept of "justice." Rawls believes that future persons do indeed have legitimate demands to make on us and that justice dictates that:

> Each generation must not only preserve the gains of culture and civilization, and maintain intact those just institutions that have been established, but it must also put aside in each period of time a suitable amount of real capital accumulation.[13]

It is up to us to determine what is just for future generations and what amount of real capital accumulation should and can be afforded to pass on.

John Passmore argues that concern for posterity (and not just the posterity of persons) is a necessary aspect of man's capacity for love. Passmore agrees that personal utility provides no grounds for true future concern. Nevertheless, as I already mentioned, he notes that persons do indeed surrender personal satisfactions for future interests, receiving only in return the fullfillment of love spent:

> When men act for the sake of a future they will not live to see, it is for the most part out of love for persons, places and forms of activity, a cherishing of them, nothing more grandiose. It is indeed self-contradictory to say: 'I love him or her or that place or that institution or that activity, but I don't care what happens to it after my death.' To love is, amongst other things, to care about the future of what we love.[14]

There is also what I call "the argument for immortality."

Anyone who believes that our lives are important after death will probably feel an obligation to care for those who will still be here. I am not merely refering to glory in heaven or burning in hell as just rewards of an omnipotent god, though this could surely have an effect if the words of that god favored posterity. Immortality for many is the consequences of their lives here and now that live on after they die. For some this may be but the erection of a large, sturdy, gravestone bearing the deceased's name. Many of us, though, desire to leave a favorable image for posterity to reflect on. This, we realize, will probably be based on the nature of the deeds we perform. Passmore calls this tendency to think in terms of immortality a manifestation of "self-love:"

> Sometimes, one must grant to the Augustinian moralist, what is involved in a concern for posterity is a form of self-love, the desire to win 'immortality.'. An institution, a person, is then thought of as carrying forward into the future at least one's name and perhaps some dim memory of one's character and achievements. So a grandfather may wish to have a grandchild named after him, or a municipal councillor a street or park. An author may be content to have his name inscribed on a catalogue card in theBritish Museum; an Ozymandias may have his statue set up for admiration of all who pass by. In a way this is pitiable, as Shelley saw, but perhaps it is essential to the continuance of civilization.[15]

Most of us would likely accept that to be responsible for the collapse of civilization in the future would not be an impressive hallmark to leave behind.

Probably the most convincing argument for most people is the argument for an obligation to our children and its

extrapolation. Most people have children and everyone was a child. We are certainly responsible for, and most would agree responsible to, our children. Parents seem naturally to desire to give their children the best they can, and this often means making their child's life better than their own. Since we often get to see our grandchildren, concern for their welfare follows as naturally. As Garrett Hardin says: "In some psychological sense posterity and ancestors fuse together in the service of an abstraction called "family."[16] To get from concern for one's visible family to concern for one's unseen family of the future follows, it seems to me, from our concern for our children respecting their concern for their children respecting their children's concern for their children, ad infinitum. Getting from this to concern for all families or general posterity can also, I think, be done. Our children, and family in general, must livein the world we create and since our children are shaped not only by ourselves but bytheir environment, this logically means we are responsible to their environment also. Chances are that the better the child's environment is, the better will be the life of the child. Different person's may have conflicting views about what an ideal future for their children's and children's childrens, etc. would look like, but what stands in common may provide a general guide for action.in terms of posterity as a whole.

Whatever the reasons for holding it, I believe that most of us do accept, at least to some degree, a moral obligation to future generations. It is my belief that this must set the foundation for a new technological paradigm, not only directing the solution to an environmental crisis but, in addition, determining where the real problem lies. A crisis involves a conflict of values, that is, one value or set of values held contradicts another set of values held by the same agent or agents. Resolving a crisis, then, involves determining which value or set of values is more important and should be retained, while abandoning conflicting values. If concern for future generations is indeed a moral value it is by definition more important than mere values of self-interest or prudence. That we often don't hold to that obligation is merely evidence that moral values can be difficult to abide by, not necessarily evidence that such a value doesn't exist. To be the foundation for our new paradigm is to have the authority to direct technology. In this case, technology must never be used to endanger the interests of future generations and, indeed, if necessary it must ensure that those values will be preserved. Any values which oppose these goals must not, therefore, carry any authority to direct human technology.

Exactly how to go about determining what the interests of posterity are and how to preserve those interests will be the object of the remainder of this paper. All we can

say for certain now is that we recognize that there are some demands which we feel posterity has the right to make on us. At this point in time most people perhaps do not realize the threatening potential consequences of their present actions to future generations. Therefore that obligation is never challenged; we are never called upon to take responsibility for our actions, to have responsibility to posterity. This makes the solution to an environmental crisis somewhat circular in the sense that we must realize our obligation in order to perceive the danger, but we may not realize our obligation until the danger becomes dangerously apparent, until perhaps it is too late. We can only hope that there are enough persons sufficiently aware of the situation and their obligation to point out to the rest of the world the error of their ways, the crisis situation.

Indeed, though not apparent to many perhaps, the sinister consequences of our present behavior may not be far off. As Passmore states:

> We now stand, if the more pessimistic scientists are right, in a special relationship to the future; unless we act, posterity will be helpless to do so. This imposes duties on us which would not otherwise fall to our lot.[17]

If this is true, posterity may not have even the option, to any appreciable degree, of being "responsible for" their own environment. We may indeed be viewed as being among the last generations with the luxury of really

deciding what life could have been like for our posterity. If indeed we have the capacity to be aware of that situation, to not decide the future for posterity will be to decide it.

Chapter 4

THE SURVIVAL OF HUMAN VALUE: THE VALUE OF HUMAN SURVIVAL

A value, as an empirical entity, represents no more than the result of a process whereby some object is evaluated by some valuing agent. Nothing can "possess" a value until it is asigned one. Because of this an object only acquires a value once it has been evaluated and then only for the agent doing the evaluation. The point I wish to make by this is that, empirically, a value establishes a relationship, here and now, between two entities and without both entities and a given time a value does not exist, or at least has no real meaning. In this sense then a value means simply that there is, at some time or for some duration of time t, some object X and some agent Y such that Y values X.

Value theorist Zdzislaw Najder agrees with this basic interpretation of value as long as it refers to particular values as actually experienced:

> Empirically, all valuable objects are valuable for somebody, primarily for given social groups, and whatever of value we encounter in actual practice, is valuable when considered to be such by somebody. In other words: we know no valuable objects apart from objects valued, i.e., considered valuable...[1]

He amends this understanding of"value,"however, when he refers to potential, non-existent values:

> ...However, from the theoretical (logical) point of view things are valuable with respect to and because of definite value-principles. For example: Andrew has rescued a child from a house on fire. His act is empirically valuable, because there are some people who know of it and value it; it is valuable theoretically, because there exists a value-principle which says that it is good to save human life. This distinction enables us to solve the problem of value of unknown objects: they may be theoretically valuable without being valuable empirically, i.e., without being valued by anybody.[2]

Clearly our search for a solution to an environmental crisis, via a new technological paradigm, must establish value-principles, based upon an obligation to certain interests of future generations, which explicitly state how human beings ought to behave in certain situations. It is important to remember however, I want to argue, that we must be able to conceive of the theoretical future interests of posterity, as stated in certain value-principles under which we are (ought to be) obligated to live today, as applying to some future valuing agent. In other words, while it may be possible, by means of such value-principles, to conceive of theoretically valuable objects not yet

empirically valuable (the interests of posterity as yet unperceived by posterity) it must at the same time be possible to conceive of theoretical valuing agents for whom the object is theoretically valuable (posterity itself) as a reasonable expectation. Without this understanding "theoretical value" lacks any meaning, simply by definition of the term "value." As Harold Osborne points out: "Propositions of the form 'X has value' are strictly indeterminant until a definite class of valuers for whom X has value is understood."[3]

It is assumed, of course, that Najder is refering to the value systems of human beings when he speaks of value-principles. In particular, in the case of his example, he specifies that subclass of human beings holding the general belief that "it is good to save human lives." It is, however, entirely possible for other creatures besides man to make value judgements and therefore hold values, though these may not appear to the creature as conscious value-principles. Clearly we can speak of the values held by other animals as species and as individuals. In the situation presented by an environmental crisis it becomes of vital importance to know whose relative interests or values are paramount. I argue that we must approach a solution to environmental crisis on the basis of human values, human interests being the only interests with which we are intimately familiar and therefore the only

foundation for a reasonable paradigm for technology. I understand human interests, however, in the same way as does John Passmore:

> One of my colleagues, an ardent preservationist, condemns me as a 'human chauvinist'. What he means is that in my ethical arguments, I treat human interests as paramount. I do not apologise for that fact; an 'ethic dealing with man's relation to land and to plants and animals growing on it' would not only be about the behavior of human beings, as is sufficiently obvious, but would have to be justified by reference to human interests.[4]

In other words, the interests or values of any other entity must first be perceived through the eyes of a human being, if indeed we are to be aware of them, and are therefore subject to human values in terms of their interpretation.

Value-principles can be simply self-serving principles, in other words principles for action which have as their goal the satisfaction of self-interest values. Quotations from someone like Ben Franklin come to mind in this regard.

> Early to bed and early to rise, makes
> a man healthy, wealthy, and wise.
>
> Don't throw stones at your neighbors',
> if your own windows are glass.

Moral principles, on the other hand, are not necessarily self-serving. Moral principles present guidelines which obligate behavior regardless of the effect on the agent. In terms of an environmental crisis, as already explained, we will have to deal in terms of moral values, because the sacrifices demanded of us by the interests of posterity may be great. Moral principles as a subset of value-

principles in general are subject to the same relational character as value-principles. Therefore, in order for something to be morally valued there must exist a moral agent to morally evaluate it. Likewise, in order for there to exist theoretical moral values based upon moral principles there must be a realistic expectation of the existence of theoretical moral agents at the time the evaluative process is to occur. Otherwise the term "theoretical moral value" has no meaning.

It is argued that certain of the "higher" or more intellegent mammal forms other than man appear to exhibit behavior which could be characterized as founded on moral evaluation. Certainly, one of the most prominant arguments for protecting the dolphin is that its behavior seems to evidence a "higher mental capacity" to rival that of man, perhaps including a moral sense. Nevertheless, I think my position as quoted in Passmore above still stands. The environmental crisis is understood first and foremost as a crisis of human values. The environmental crisis has been caused, and must be solved, by man. This does not mean that a human ethic cannot obligate the preservation of the dolphin, only that it must be recognized that the primary moral agent involved in the solution must be human.

Because the environmental crisis is a crisis for man, the solution to an environmental crisis must, by definition, intend to bring about a better future for man.

The goal in establishing such a solution then is to make certain that all value-principles involved in our new paradigm push towards that better future, or at least present no threat to it. The central point I want to make in this chapter, to which I have already alluded, is that for there to be conceived a theoretically better world of the future, as an end towards which present morally obligated actions are but a means, we must be able to assume the theoretical future existence of valuing agents, indeed valuing human agents, for whom the world will actually be better. Since behavior according to moral principles would seem to imply the striving towards a morally better world it would further be true that a morally better world must assume the existence of moral agents, for our purposes moral human agents.

"Survival," simply stated, means: "to remain existing," or: "to continue to exist." Future eriented moral principles, as guidelines towards a morally better future world, would naturally seem required to provide for the survival of the moral agent for whom the future is to be morally better. If indeed those moral agents are human beings, as the entity with whom we purport to be concerned, we must assume to be planning for a world in which at least some human beings will survive. If this is not the case the future will not actually, in human terms, be morally better. To put it simply, if human beings as at least a species

containing some agents holding our moral values can not be guaranteed survival, can not be assured of continued existence, the search for a solution to an environmental crisis probably becomes a meaningless endeavor for us.

As obviously indicated, that the human species might survive does not necessarily presume that there will at the same time continue to exist moral agents among its ranks holding moral values similiar to ours. It is certainly possible to conceive of a world full of human beings none of whom holds any of our moral values. Such a world would possess no morality in our sense, and would therefore have no conception of what it might have been like to have been morally better in our terms. Such a world ought not to be the object of a solution to an environmental crisis. This speaks directly, I think, to a concern narrated by Passmore:

> Let us suppose that we have good ground for fearing that men can continue to survive as a species only within a wholly tyrannical society, dimly foreshadowed by Hitler's Germany or Stalin's Russia, in which the rulers, aided by modern observation-devices, will succeed in utterly destroying personal affection or any form of human enterprise. In such a society art survives only as a form of flattery, science as monitorial technology, philosophy as ideology. Suppose, furthermore, that we also have good ground for believing that a society of this sort will cover the entire surface of the earth and that there is no possibility of its ever changing. From such a world, everything some of us love would have disappeared, not for millennia, but for ever. In terms of Rawl's account, this would be a posterity which would <u>not</u> hand on what we had handed on to it. We should be unique in being the last generation to be free.[5]

For Passmore, such a society would clearly be void of any moral value for us as viewing it in the present. Why ought anyone realizing this, he asks, make sacrifices in order to ensure that it comes into existence?: "Should we not then content ourselves with doing the best we can in the present, leaving posterity to stew in its own juice?"[6] Clearly I think we must, but, and this is very important, only on the condition that we are absolutely sure that the society of the future must be, morally, totally undesireable. Otherwise we are obligated to seeing that mankind in the future has the opportunity of creating something better than we have now.

Nevertheless, it is still true that any moral principles meant to provide a solution to an environmental crisis, unless such a solution is absolutely impossible, contradict their own goals if they do not take into account the continued existence or survival of mankind. It is a self-defeating system which ordains men to create a better world for men which will have no men in it. This is so obvious that we simply assume it. Nevertheless, I think that the assumption of continued human survival is no longer necessarily valid and that that fact ought to be clearly recognized.

We presently live in an age when Robert Heilbroner can open a popular book like The Human Prospect with the following:

> There is a question in the air, more sensed than seen, like the invisible approach of a distant

> storm, a question that I would hesitate to ask aloud did I not believe it existed unvoiced in the minds of many: "Is there hope for man?"[7]

For Heilbroner, not only do mankind's present behavioral trends spell almost certain civilizational collapse of some sort in the not too distant future, they carry within them the potential seeds for "an impending catastrophe of fearful dimensions."[8] William Watts, president of the Potomac Associates, a group which helped sponsor the widely acclaimed The Limits to Growth, acknowledges this threat of catastrophe in his foreward to that book; hoping that the book:

> ...will lead thoughtful men and women in all fields of endeavor to consider the need for concerted action now if we are to preserve the habitability of this planet for ourselves and our children.[9]

Barry Commoner, author of The Closing Circle, another widely read work, states:

> The issue of survival can be put into the form of a fairly rigorous question: are present ecological stresses so strong that-if not relieved-they will sufficiently degrade the ecosystem to make the earth uninhabitable by man? If the answer is yes, then human survival is indeed at stake in the environmental crisis. Obviously no serious discussion of the environmental crisis can get very far without confronting this question.[10]

Commoner makes it clear, in the course of his work, that he does indeed perceive a very real threat to human survival. With all of the warning we have thus far received, even should that threat turn out to be illusory, it is certainly an issue we should look into openly and honestly with all haste. Indeed we are morally obligated to do so.

It is no longer the case that we can ignore the threat of oblivion. In establishing a moral system with any provisions for the interests of posterity we must recognize the priority of the survival imperative. We must realize that for any future oriented moral principles to make sense they must in no way threaten human extinction, for such a value would contradict its very goal. The future cannot be better for man without man. In regards to Passmore's problem, or what many think of as "the 1984 problem" I can only think of one solution. We must ask ourselves whether it appears without a doubt that the continued existence of mankind can only be maintained at a terrible price. Indeed we must ask ourselves if we had to live under such a system if we, in all honesty and with a full realization of the human capacity to adapt satisfactorily to new situations, would choose extinction for ourselves and our loved ones rather than living under the system. What I am getting at is that human survival will almost certainly require great sacrifice and a loss of freedoms, whether voluntary or forced. This, alone, however, is not grounds for dooming posterity to extinction. Indeed this could result in what those living under such a system might regard as very satisfying conditions considering the circumstances. The question is not an easy one and must be weighed with great care. If there is any hope of providing a satisfactory future for posterity, however, I think that we are morally obligated to seeing that they survive to enjoy it.

This then is the first point to add to any new moral paradigm for applied science, all things considered. It is indeed a fundamental interest of posterity that it be allowed to be at all. It ought to be the goal of technology, therefore, to ensure, first and foremost, that the survival of the human species is not jeapordized. Thus survival value ought to override (almost) any value, moral or not, which contradicts it. In terms of the 1984 problem I can only say that the end does not justify any means. Indeed we ought to utilize the "least offensive" technological means which, nonetheless, still insure human survival. John Platt states in an article entitled: "What We Must Do:"

> In the past, we have had science for intellectual pleasure, and science for the control of nature. We have had science for war. But today, the whole human experiment may hang on the question of how fast we now press the development of science for survival.[11]

This is true for all of the sciences and their applications, both natural and social, for without corresponding change in all spheres of human life the goal of human survival will probably not be achieved. Presently, without the acknowledgement of the priority of human survival as a long term goal which our new paradigm would bring, we are guided by a variety of values, moral and non-moral which may carry us unknowingly to a premature end, an end which we never desired but yet may never have anticipated.

An analogy is obvious, I think, in the field of medicine where those alive now represent the doctor and posterity the patient. Just as the doctor would prescribe no treatment

which unnecessarily threatened the survival of the patient, so we too ought to realize, and indeed feel the obligation, that we should initiate no program which threatens the survival of posterity. The difference is that while the doctor operates (no pun intended) under a paradigm which expressly states that the doctor ought not unnecessarily threaten the survival of the patient, for otherwise any threatment would be valueless, we aren't at present forced to think in terms of any such expressly stated paradigm in relation to the species. If we were, perhaps we would see the foolishness of our ways.

There is no reason to believe that a better future will come immediately, even if we can guarantee human survival. Though Potter agrees with my basic paradigm, he emphasizes this point:

> It seems that a reasonable way to build a value system would be to set up as a minimal requirement the survival of the human species under conditions that would permit further evolution and delay extinction. For if we admit with Teilhard that we do not now live in an ideal society and that we cannot change it overnight, we must agree that we have to have time to decide what kind of a society we want and what steps we must take to secure it.[12]

In addition there is certainly no reason to believe that safeguards which guarantee the survival of man will be easy for present generations to accept. Heilbroner warns of the threats such a new paradigmatic outlook imposes on society and each of us as individuals:

> Let me therefore forewarn the reader that he must be prepared to face problems in which values and

> beliefs precious to him may be assaulted by overriding claims of human survival, and that he must therefore be prepared seriously to consider painful conclusions if he is not simply to substitute preference for analysis.[13]

The so-called 1984 problem must be viewed, I think, in the light of both of these facts. Nevertheless, if there is even a flicker of light at the end of the tunnel I think that the effort to preserve mankind is worth making. I don't understand how a being which prides itself on its unique rational character could allow itself to be exterminated by its own devices. Nevertheless, as Stephen Pepper warns in an article entitled:"Survival Value:"

> Through social intelligence men may keep the impact of the sanctions for survival at a distance and so allow satisfactions a wide range of freedom to expand. But if this social intelligence lags and fails, the penalties of biological maladaption to the life zone man himself has largely brought into being will inexorably take their toll.[14]

The threat of human oblivion should indeed now be a serious issue for all rational people; and they are serious who ask: "Is there hope for mankind?"

Chapter 5

ENVIRONMENTAL PLANNING: THE LONG-RANGE SURVIVAL OF HUMAN VALUE

A paradigm which merely established safeguards for the survival of the human species would not, by any means, annul the fears of most of those concerned with the potential consequences of an environmental crisis. For one thing, the survival of a species, as a goal, need only guarantee the continued existence of a very limited number. The sole presence of one man and one woman on earth, with the opportunity and ability to mate, could conceivably represent survival of the human species. It seems to me that most people would simply not be satisfied merely to know that at least one man and one woman would survive an environmental catastrophe. In fact, even a system which guaranteed the continued existence of a small number of people such as might survive a nuclear holocaust would not be labeled by many a solution to an environmental crisis; it would not ensure the potential for a future which by any conceivable standards could be better than the present state of crisis.

In addition we may raise the specter of 1984 which I mentioned in the last chapter. What price is the insurance of survival worth? Perhaps it may happen that we shall reach a point in time when it becomes apparent that human survival can be maintained under only the most horrendous of conditions; conditions which we living today could not conceive of as satisfying any of the human values which make humanity worth preserving. I am not saying that if human civilization ever arrived at that point people would not still grasp at whatever means of self-preservation were available. In other words, I am not at all certain that we will not inevitably arrive at such a point (1984 or far worse) whether we would acknowledge that today as a desireable future or not. Nevertheless, my only point here is that a new paradigm should not have as its goal or end merely survival by whatever means. As Passmore states, paraphrasing the words of the philosopher M.P. Golding:

> ...we should, Golding says, be reluctant to act on the predictions of what he calls 'crisis ecologists', who would have us plan for mere survival. We should do better, in his words, 'to confine ourselves to removing the obstacles that stand in the way of posterity's realising the social ideal'.[1]

This is true, however, only if we keep in mind that striving for "the social ideal" is only a reasonable goal if we can guarantee the survival of mankind.

Indeed, that human survival is in jeapordy even should

the worst of our fears be realized is a much disputed point in itself. Though famine, caused by overpopulation and food shortage, or disease, caused by famine or worldwide pollution of some sort, could theoretically decimate the population, it is unlikely that every last man, woman, and child would be exterminated (though there are arguments to the contrary). Probably nuclear devastation on the massive scale with which any nuclear war would likely be involved carries the threat of total annihilation of the human species, and most other forms of life on earth as well. Nevertheless, there are those who dispute even this point (usually the military) and argue that there would indeed be survivors to a nuclear holocaust even if those survivors have to live in underground sealed chambers for an indefinite period of time. The point is that even someone who believed in the survival value of bomb shelters in the event of nuclear war, the most serious threat to human survival as a species in all likelihood, would probably not be satisfied that even in the event of such a nuclear war an environmental catastrophe would have been avoided. For as The Limits to Growth states:

> The crux of the matter is not only whether the human species will survive, but even more whether it can survive without falling into a state of worthless existence.[2]

Though "fever, famine, and war," as perhaps representing the inevitable conclusions of present uncorrected civilizational trends, may not actually threaten species survival, they are

not eventualities towards which we could conceivably look forward with anticipation. Indeed, it is the promise of such consequences should some sort of corrective measures not be made that would constitute the very existence of what we would term an "environmental crisis." In other times the collapse of a civilization would designate the end of a particular culture in a particular place at that particular time, that culture being absorbed into or simply replaced by another. Because of modern day intercommunication and interdependence, economically and culturally, of peoples it is possible, in many repects, to speak of worldwide civilization as one entity. Certainly modern technology, when used anywhere in the world, is used in the same manner, that is, to obtain the same goals. In this way civilizational collapse could ultimately entail the collapse of all civilization on earth.

In the event that we are indeed faced with environmental crisis it is inevitable, simply by the nature of crisis, that certain major changes would be required to avoid any kind of civilization collapse. In other words, important human values would have to be sacrificed. Clearly, and probably most importantly, the "standard of living," as we presently understand that term, would have to be lowered at least for the average American. In terms of resources alone The Limits to Growth points out:

> In order to guarantee the availability of adequate resources in the future, policies must be adopted

> that will decrease resource use in the present... as long as the friving feedback loops of population and industrial growth continue to generate more people and a higher resource demand per capita, the system is being pushed toward its limit-the depletion of the earth's non-renewable resources.[3]

What would happen to the world if most of the non-renewable resources upon which modern civilization depends were to run out suddenly is probably something unpleasant to think about. Surely any sort of obligation to future generations would morally rule out such behavior. Nevertheless, if this, in itself (the lowering of the "standard of living"), is considered the primary symptom of a civilizational collapse then there really can not exist an environmental crisis as I have defined that term. A "crisis" retains the option for a future that is better than the present threatened state of affairs. Clearly, then, if there is to be a satisfactory resolution of an environmental crisis it is not going to be on the basis of an encreased material standard of living.

Therefore, I am basically in agreement with Barry Commoner when he says:

> This does <u>not</u> necessarily mean that to survive the environmental crisis, the people of industrialized nations will need to give up their "affluent" way of life. For as shown earlier, this "affluence," as judged by conventional measures-such as GNP, power consumption, and production of metals-is itself an illusion. To a considerable extent it reflects ecologically faulty, socially wasteful types of production rather than the actual welfare of individual human beings.[4]

A crisis is a conflict of values. Such a conflict cannot produce a healthy situation because sooner or later one value will have us behaving in a manner obviously in contradiction

with another. For instance, it seems quite apparent that our present desire for a constantly increasing standard of living may very well conflict with our moral obligation to future generations (and indeed perhaps with our personal desire for future security and happiness). The only way to eliminate such a situation is to choose which conflicting value is most important, discarding the other, at least insofar as it creates conflict. I have already argued that probably at least the survival of future generations should take precedence over any other values. In addition, in this chapter I have suggested that certain major environmental calamaties which could potentially manifest themselves worldwide, "fever, famine, and war," ought to be averted, not only worldwide but locally if possible, and not only for posterity but perhaps even for ourselves. These are moral values, meaning by definition that they are more important than any value of self-interest or prudence. I would contend that a paradigm which consisted of all of those values we hold most dear that were consistent with one another, including above all, I think, those values we hold to be moral obligations to posterity, would promise a future which, at least for those living in it, would be considered better than the present contradictory state of affairs. If nothing else, I think what Lynton Caldwell says is true:

> Failure to develop a workable environmental ethic adds to the probability of a future in which mass frustration becomes the dominant social problem.[5]

In stronger terms still, posterity would know that it would not have to face sudden massive mortality or severe scarcity of resources in its or its children's lifetimes. Human civilization would have escaped the chaos which a formerly uncorrected state of affairs would have promised for it.

As Blueprint for Survival warns:

> Faced with inevitable change, we have to make decisions soberly in the light of the best information, and not as if we were caricatures of the archetypal mad scientist.[6]

Garrett Hardin explains that our present approach to problem solving is highly questionable and in the long run usually ultimately ineffective:

> The Newtonian response to almost any social evil is to buy hardware in the hope that the problem will somehow be solved by the mere magnitude of the expenditure. It seldom is. The Darwinian response is to think before acting-i.e., to study and to analyze, on the assumption that we are dealing with a complex web of causes and effects, and that intuitive responses will probably do more harm than good.[7]

Both quotes, I think, point out the same error in modern human reasoning. Most of our personal values concern immediate interests and therefore seem to require immediate solutions. Sometimes technology can provide an satisfactory immediate solution but more often the apparent solution to one problem becomes the cause of another. This is surely the crux of the environmental crisis; what seems good today is a threat to future interests. If those future interests turn out to be more important than the present interests for which the harmful solution was

devised we will certainly be sorry for our present behavior in the long run.

The only way to avoid a situation in which future interests are inadvertantly compromised is first of all to be always aware of what those future interests are. As I have already stated, a new paradigm must consist of our most important values, all of which being mutually compatible. Secondly, we must proceed in a thoughtful manner taking those future interests into account whenever necessary. In other words, modern man must begin to plan his behavior is such a way that the attainment of future oriented values become goals towards which present behavior is, if necessary, a means. A new moral paradigm would make planning of this sort absolutely requisite to any kind of ethical behavior. Clearly, if we are going to make an obligation to certain future interests of primary concern this is the only responsible way to proceed.

The problem is, of course, that modern man, perhaps mankind historically, has never realistically looked very far into the future. Long term considerations have always been discounted for short term gains. In addition, a myopic world view, focusing on a very few variables over time, has always been substituted for a broader view which takes into account factors which might otherwise be unforseen but influential in terms of obtaining the final goal. This is certainly not surprising, for planning requires an

accurate prediction of what is or is not possible or probable. In other words, because of unforseen circumstances the farther into the future we have to plan, and consequently the more variables we must, or ought to, take into account, the less certain we can be that our plans will be realized. We tend, therefore, to grasp for immediate and easily obtainable short-term gains, perhaps at the expense of more important long-term goals. Certainly modern economists tend to think in this manner. Passmore states:

> Economists, quite unlike biologists, inevitably think in short terms. This is one reason why, in debates about the need for conserving raw materials, they so often sound optimistic. From their point of view it is quite absurd to worry about what may happen thirty years hence. An economist, indeed, thinks of himself as soothing our conservationist qualms if he tells us that supplies of a particular mineral will last until the year 2000-less than thirty years off![8]

Similiarly, William Ophuls tells us that:

> ...for all practical purposes costs and benefits more than 20 years in the future are discounted to zero; owing in part to additional factors like the prevailing rate of return on capital, it is a rare economic decision maker whose time horizon extends more than ten years into the future. Thus, critical ecological resources essential for future well-being even 30 years from now not only have no value to a rational economic decision maker, they scarcely enter his ealculations. He is therefore likely to make decisions that irreversibly deplete or destroy vital resources (especially since he realistically fears that his own self-restraint would simply hand over to another the opportunity for profit). Thus, as Karl Marx put it over a century ago, the watchword of market capitilism is "Apres nous le deluge," as entrepreneurs strive to maximize current benefits at the expense of the future.[9]

Nevertheless, as Van Renssalaer Potter asks:

> Is it possible that civilizations become extinct because they proceed on the basis of short-range decisions and are unable to estimate their future needs in relation to their future environments.[10]

The problem with ignoring long-term goals, or, as we often do, making long-term predictions on the basis of an extrapolation of present day circumstances and trends, is that in a finite world circumstances can change quickly and trends end abruptly. If limits are unforseen, and consequently unplanned for, they can and will eventually, when reached, wreak havoc on mankind. In other words, what is true now, in terms of available resources, the earth's tolerance for pollutants, political relationships, etc., may not (and will not) always be true and can not be counted on in making future plans. Unless we can anticipate some of these changes we can not expect to alter our behavior in order to adapt to our environment in a responsible manner, taking into account future oriented values. A goal is only reasonable if its attainment is possible. A long-term goal based on an assessment of the short-term situation does not allow an accurate prediction of the possibility of its actualization. In other words, we are looking at the future with blinders on.

The only way to avoid this situation is to always make certain that short-term goals cohere with those long-range goals which we consider to be vital. Therefore, short-range goals should always be planned as if they were a means for

or at least not in opposition to those long-range goals. If a conflict becomes evident the short-range goal must be sacrificed or altered. As opposed to extrapolating long-range goals from the short-term circumstances, planning short-range goals according to the long-term circumstances always allows a realistic assessment of what the short-term, as well as the long-term, circumstances will actually be. This is not always necessarily true, as we saw, when the procedure is reversed. Planning for the long-term with a wide range of variables avoids the surprise of discovering the incompatibility of our short and long-range values. Only in this way can value conflicts be avoided or resolved and, for our purposes, an environmental crisis solved.

Unfortunately, most social planning, including plans made in regard to the environment, have been to date what Ophuls calls "incremental decisions:"

> Incremental decision making largely ignores long-term goals; it focuses on the problem immediately at hand and tries to find the solution that is most congruent with the status quo. It is thus characterized by comparison and evaluation of marginal changes (increments) in current policies, not radical departures from them; consideration of only a restricted number of policy alternatives (and of only a few of the important consequences for any given alternative); the adjustment of ends to means and to what is "feasible" and "realistic"; serial or piecemeal treatment of problems; and a remedial orientation in which policies are designed to cure obvious immediate ills rather than to bring about some desired future state.[11]

Ophuls believes that such a procedure, in relation to the environment at least, is better termed "muddling through." As Ophuls concludes:

> In sum, as a description, disjointed incrementalism provides an almost sufficient explanation of how we have proceeded step by step into the midst of ecological crisis and of why we are not meeting its challenges at present; as a normative philosophy of government, it is a program for ecological catastrophe; as an entrenched reality with which the environmental reformer must cope, it is a cause for deep pessimism.[12]

Interestingly enough, in the same way in which Ophuls analyzes environmental crisis in terms of modern man's political organizations, Van Rensselaer Potter makes a parallel analysis, without using the term "incrementalism," in the field of biology, in particular in the field of evolution:

> Why does natural selection so often lead to extinction rather than to perfection? The reason is that natural selection stresses short-time gains on a generation-to-generation basis. It cannot anticipate changes in the environment, yet the environment is constantly changing. The survival of a species is determined by how well it is adapted to its environment, and progress is in part definable as change that permits survival in a changing environment. Following Thoday, we may propose a new definition of the survival of the fittest by saying that "the fit are those who fit their existing environment and whose descendants will fit future environments."[13]

Both men are saying basically the same thing in different ways. Without the ability to realistically provide for future circumstances it is possible to walk blindly into unforseen situations which may result in catastrophe.for the species, in this case man. Indeed, historically, this has been true not only for species but for human civilizations as well. Without planning for the future, and not just the immediate future, a civilization can only hope that its values do not ultimately conflict, for this is what crises are made of. It would appear that we, as modern civilization world-wide,

and as responsible for the human species now and in the future, have indeed unknowingly crossed our values. We have not realistically planned for an environment that is sustainable or that will sustain us. The consequences, should radical change not be forthcoming, can not only be guessed at, but even rather acurately predicted.

I must therefore agree with Potter when he states:

> We hold that the scientific-philosophic concept of progress which places its emphasis on long-range wisdom is the only kind of progress that can lead to survival. It is a concept that places the destiny of mankind in the hands of men and charges them with the responsibility of examining the feedback mechanisms and short-sighted processes of natural selection at biological and cultural levels, and of deciding how to circumvent the natural processes that have led to the fall of every past civilization.[14]

However I want to say more than this and, following up what I brought out at the beginning of this chapter, affirm the role of planning as a means of satisfying more than merely survival value. To the extent that our obligations to future generations (and indeed the desire for our own future happiness) is greater than mere survival, to that extent we are obligated to plan for those obligations so that the future interests of posterity will not be compromised. Indeed it is only in this way that we can avoid the survival of a humanity we might not have even wanted to see survive. Man for most of us is far more than simply a biological organism maintained by food, water, and air. If that were the case mere physical survival would then be the goal of environmental planning. "Environmental planning" has as its goal the maintainance

of whatever environment is necessary to fulfill man's values. The prerequisites to any environmental planning, then, is the determination of what values are to be the goals of an environmental plan.

This does not, however, mean that we are free to choose whatever values we please as a goal for human endeavor. All human accomplishment is limited to the adaptability of the human environment. In other words, if our demand upon the environment is greater than the environment can supply, our values or goals are unrealistic, and therefore unreasonable. In order to establish reasonable goals we must begin, as Willis Harmon asserts, by realizing that:

> The new paradigm would remind us that the root meaning of economics is home management, and that the planet earth is man's home. Managing the earth, with its finite supplies of space and resources and its delicate ecological balance, and conserving and developing it as a suitable habitat for evolving man, is a far different task than that for which the present economic system was set up.[15]

Economics must be grounded in another science, whose title comes from the same Greek root oikos, meaning "home." "Ecology" means, in Greek, "the study of the home." In English, it is the study of the relationship between living things and their environment. Without a proper understanding of our "home" we will never live comfortably within it. Indeed Lancelot Law Whyte exclaims:

> This is scarcely a hypothesis! It is good biological sense. A species capable of understanding must possess balanced understanding in order to survive. Otherwise in the excitement of exploiting partial and unbalanced knowledge it will destroy itself.[16]

Whether or not human survival is actually at stake, it is certainly true that the better we understand our environment and our relationship to it the better chance we have of living without contradiction in our values.

Thepurpose in learning more about man and his environment is to provide ourselves with a realistic understanding of the choice of futures open to us. Russell F. Rhyne, in an article entitled "A Method for Planning Alternative Futures" explains:

> As ecology accepts man and his works within its field of discourse, it will have to talk less about relatively determinant transitions toward some stable equilibrium and refer more often to alternative sequences of patterns-scenarios. The same scenarios that would be useful to the new ecology of man as planning referents also promise to serve a broader need by helping all of us appreciate the options that are realistically open to man-in-the-biosphere.[17]

As stated earlier, a goal is only reasonable if its attainment is possible. It would appear that an openness on the part of modern man towards environmental planning might possibly make him realize that his civilization is not ultimately sustainable. The future we project for modern civilization, without containing any serious behavioral changes on the part of mankind, is apparently not a realistic option. If we attempt to project all of our modern values on the future I think we discover that the attainment of some goals ecclipses the realization of others, and perhaps others ultimately much more important. Yet without this foresight, and the resultant planning of human behavior, we might well

stumble blindly into environmental catastrophe. If man does possess the ability to foresee environmental crisis, to not act upon that knowledge is to violate our obligation to the future of mankind. Ignorance excuses responsibility only if that ignorance is unavoidable. I don't think that this ought to be the case for modern man. And the longer we wait, the greater the cost of reform to ourselves and to the future, as Walter Rosenbaum explains in his analysis of The Politics of Environmental Concern, which is the title of his book:

> Generally, the longer the nation waits to create prudent environmental management, the fewer options will be available, the more authority government will have to possess, the higher will be the economic costs, and the more severe the solutions: Delay, in brief, leads to a situation increasingly close to crisis and requires the social costs of crisis management.[18]

At this point, the "social costs of crisis management" are probably already high, but delay can only make the solution to an environmental crisis more difficult to obtain, if not impossible.

An example of foreseeable crisis, and the need for environmental planning, relates to what Garrett Hardin calls the earth's "carrying capacity."[19] Carrying capacity is the ability of an environment to support a population of a certain size. The problem is: How do we decide when an area is "overpopulated?" Paul Ehrlich defines overpopulation as the point reached "when human numbers are pressing against human values."[20] If we possess a value system which encourages reproduction we have clearly reached the crisis

point when "overpopulation" occurs. One set of values has to go; either we agree to "want" less children or we give up "luxuries" in order to support a growing population. Indeed one of those"luxuries" which we lose may be watching most of our children survive infancy. Yet if we are aware of the "quality of life"we wish to maintain we ought to be equally aware of the environment necessary to support it. We must therefore adjust our population accordingly, finding the optimal carrying capacity. Only by planning the future with all of our values in full view can this be possible.

One of the principle arguments against long-range planning is that we don't, in effect, really possess the ability to foresee consequences to the extent necessary to make responsible decisions about a course of action. Science can never provide a perfect and complete picture of "reality" and unforeseen variables can make planning difficult if not futile. Nevertheless, I agree with William Blackstone:

> Information from any empirical science must have some degree of tentativeness about it. The degree may be higher in ecology. But such caution is important, for as Aristotle pointed out so well, ethics and politics deal with variables and although we cannot have absolute certainty in these areas of normative decision, we must base those decisions on the best data and theories. In the case of the proper use and management of our environment, tremendous consequences in terms of the quality of life are at stake.[21]

The consequences of environmental catastrophe, if real, are so threatening that the risk of partial knowledge as a basis for action is far less than the risk of ignoring completely

the situation.

Nevertheless, we must not ignore this warning completely. The question is: To what extent ought we to plan for the future? Our understanding of our environment is never complete and, therefore, unforeseen circumstances can play a major role in altering what seems to be a reasonable expectation. As Passmore states:

> Society, as much as nature, resists men's plans; it is not wax at the hands of the scientist, the planner, the legislator. To forget that fact, as a result of conservationist enthusiasm, is to provoke rather than to forestall disaster.[22]

Willis Harmon warns:

> Every major policy decision tends either to foster change or to impede it. Actions which attempt to force it too fast can be socially disruptive; actions which attempt to hold it back can make the transition more difficult and perhaps bloody.[23]

Both men point out what I call "the threat of overplanning." Roughly speaking, it is probably true that the farther into the future that we attempt to plan, the more variables enter into the calculation and the less chance we have of predicting possible futures. The danger is probably greatest because, as John Black points out:

> From our own vantage point in history, we project our own ideals and our standards into the future, believing that those elements of our environment which we hold most precious will also appear so to our descendents.[24]

In summary; we cannot be certain that what we save for posterity will necessarily be something that posterity will want or can use. As Passmore says: "We cannot be quite sure that a beggar will not choke on the bread we offer him."[25]

Because of the restrictionsoon the extent to which possible future states can be predicted, and thus planned for, we must be careful, I think, about the extent to which we attempt to do this. The only general rule of procedure that I can come up with for determining the timespan a plan ought to have is that the more important the value, the farther into the future we ought to plan for its satsifaction. Nevertheless, each successive generation ought to have the ability to reaffirm or alter any plan, depending on the changes in human value which occur over time. Long-range planning would then be on a generation to generation basis.[26] There may, however, perhaps be obligations which we can conceive of as applying to all of mankind over all time, or far all practical purposes to infinity. In other words, these would be values, indeed I think they would have to be moral values, which can never be allowed to be contradicted. The more rigid and inflexible the plan, then, in relation to such a value the better. I have already identified thesurvival of the human species as one such value (though even here, as pointed out earlier, there may be qualifications) for I agree with Jeremy Swift when he says:

> We cannot know what will happen a hundred or a thousand years hence, and all we can do is set goals for the human environment in a spaceship economy that we believe worthy, and revise them periodically. But one principle above all others seems to be self-evident: what we do now should not limit the choices open to our descendants. We do

> not even know for certain that posterity will care about the environment, but we must at least give them the choice.[27]

There may be others, but they should be chosen with extreme care. Nevertheless, I agree with Kirtley F. Mather when he concludes his article entitled "The Emergence of Values in Geologic Life Development" with the words: "The description and selection of the most noble human values are literally of cosmic significance today."[28] I also have confidence in man's ability to make this selection, if he should ever set his mind to it. Certainly any creature which calls itself "the rational animal" has no excuse not to realize its highest goals. Surely mankind has been around long enough to have learned quite a bit from the past; at least Robert Matthews seems to think so when he states, in "A Future for the Past:"

> History is the record of human action, individuals and societies planning and acting. Through his historical study, the long-range planner has the unique privelege of viewing these earlier planners' choices and decisions, from above as it were, seeing both the antecedents and the consequences of their planning decisions. Recognizing planning to be a very fundamental and very old aspect of human existence, the long-range planner hopefully will develop the tempered confidence in man's ability to plan for his future, a confidence which will be necessary in order that he do well his own task of planning. If this historical appreciation can be achieved, the study of history will certainly have contributed its share towards assuring the quality of life in the future.[29]

Why is modern civilization shirking its duty to plan for its obligations to those generations yet unborn, and indeed for the future well-being of those now alive? Why can not modern man at least think in terms of a paradigm

which allows technology to work towards ensuring that at least those future generations will exist? Robert Matthews, I think, explains the problem well:

> With the long-range planner...our nontechnical demands are great, and his nontechnical responsibilities are heavy: he must choose between the possible future world-states. That this choice is fundamentally nontechnological in nature, that technological consideratins serve only as constraints upon acceptable possible world-states, cannot be overemphasized. We Americans suffer from a naivete, or perhaps more correctly an intellectual timidity, which attempts either to translate the nonquantitative dimension of human existence into quantitative terms, or simply to neglect this dimension altogether.[30]

As I stated earlier, we must face up to the fact that an environmental crisis puts human values at stake. We cannot employ a technical solution, we cannot apply science to the problem, until we have defined what the problem is and where we hope to be once the problem is "resolved." Clearly this requires planning. It is the failure to establish a paradigm providing guiding values and the obligation to plan for the future which makes us think that we have lost control of our society, that we are the "prisoners" of technology. Langdon Winner has written an entire book on this problem which he entitles: Autonomous Technology. In it he states:

> Technology, then, allows us to ignore our own works. It is license to forget. In its sphere the truths of all important processes are encased, shut away, and removed from our concern. This more than anything else, I am convinced, is the true source of the colossal passivity in man's dealings with technical means.[31]

Can we break out of this syndrome and get a firm grasp on science so as to apply it to purposes which we hold to be

most vital? Can we really develop a paradigm which encorporates an ethic powerful enough to put science back "under clear control?" I can only hope that this is possible for I believe with Lynton Caldwell that:

> An ethic powerful enough to control the use of science can be hardly less than an ethical system sufficiently strong and comprhensive to shape the goals and procedures of society.[32]

Chapter 6

INSTITUTING A NEW MORAL PARADIGM

I have proceeded to this point in the paper with the belief that the elements of the new technological paradigm which I have so far proposed can be accepted by most thinking people and viewed as a guideline for the institution of necessary changes into modern society and civilization. I have assumed the existence of an obligation to future generations consisting in at least a guarantee of their right to an existence, and I have affirmed the legitimacy, and indeed the obligation, of engaging in long-range planning as the only responsible manner of dealing with the future. I believe, in other words, that these are basic moral obligations and that all human behavior ought therefore to be consistant with them. Otherwise, I think, we cannot help but feel guilt at their betrayal. On the basis of this new moral paradigm, by which technology is to be given a new direction and guidance, I hope to see history change its present course.

Apparently not all behavior, however, is consistant with such a paradigm or we probably would not be speaking presently in terms of an "environmental crisis." Ideally persons who encouraged or engaged in behavior which dondemned the interests of future generations, at least those interests which we have delineated to be most vital, would be, in modern society, deserving of the same treatment we presently give to those who encourage or engage in criminal activity. Violators would at least receive a social sanction to acknowledge that they had less than common sense or decency. Assuming that most of us do indeed experience these feelings of obligation towards posterity which I have postulated, probably one of two basic reasons explains why we misbehave at the present time, though the explanation may be a combination of both.

Perhaps all that we need at this point is an appeal to human reason. One of the duties of the environmentalist would be, then, to make sure that the public is aware of the real issues at stake. With the facts of environmental decay apparent the public would naturally realize the extent of environmental crisis and promptly act, on the basis of their moral convictions, so as to implement a solution. All that is needed is a dissemination of the relevant findings of science which Barry Commoner, a leading proponent of this view, finds at the present to be insufficient:

> For the public has little access to the necessary scientific data. Much of the needed information has been, and remains, wrapped in government and

> industrial secrecy. Unearthing the needed information and disseminating it to the public is, I believe, the unique responsibility of the scientific community. For to exercise its right of conscience, the public must have the relevant scientific facts in understandable terms. As the custodians of this knowledge, we in the scientific community owe it to our fellow citizens to help inform them about the crisis in our environment.[1]

The environmental crisis is then, for this point of view, primarily a problem of ignorance. Certainly most books written today on the environment are an attempt to clear up some of this ignorance, taking the validity of my new paradigm as an assumption.

Nevertheless, there are those who say that morality and intellect alone cannot be counted on to guide men back along the path of ecological wisdom. The most widely recognized proponent of such a view is undoubtedly Garrett Hardin, who indeed has titled one of his recent books: The Limits of Altruism. Hardin states:

> Moralists try to achieve desired ends by exhorting people to be moral. They seldom succeed; and the poorer the society (other things being equal) the less their success.[2]

Hardin explains the reason for this fact:

> When those who have not appreciated the nature of [illegible] large groups innocently call for "social policy institutions (to act) as agents of altruistic opportunities" they call for the impossible. In large groups social policy institutions necessarily must be guided by what I have called the Cardinal Rule of Policy: Never ask a person to act against his own self-interest. It is within the limitations of this rule that we must seek to create our future.[3]

All of this leads to what Hardin calls "the tragedy of the commons." In this theory he states that if the earth is

finite, like a commons, and all of its inhabitants attempt, uninhibited, to maximize their share of its resources, which it is the natural proclivity of man to do, scarcity and eventual ruin for all is the only conceivable result. Using the analogy of the herdsman he states:

> Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another... But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit-in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in the commons brings ruin to all.[4]

If we agree with Hardin, what we must look for is some sort of external control upon the behavior of the individual, some means whereby we are forced to take a cut in our share of the commons when this is necessary. We would need the kind of faith that Frazier evidences in B.F. Skinner's Walden Two, when Burris asks:

> "But you yourself seem to have unbounded faith in human nature," I said.
> "I have none at all," said Frazier bluntly, "if you mean that men are naturally good or naturally prepared to get along with each other. We have no truck with philosophies of innate goodness-or evil, either, for that matter. But we do have faith in our power to change human behavior. We can make men adequate for group living-to the satisfaction of everybody.[5]

Both of these viewpoints, represented here by Commoner and Hardin respectively, have, I think, some validity and importance. Certainly it would seem that Commoner must be

right to some extent or there is probably no hope of ever solving an environmental crisis. Unless we can count on some public conscience, or the conscience of some of the public, being drawn to action by an accurate understanding of the relevant data, and an appreciation of the sort of moral paradigm of which I have been speaking, how can we hope to even begin the type of "ecological revolution" which will undoubtedly be necessary to favorably resolve an environmental crisis? Clearly, on some level, there must exist circumstances where we can reasonably expect: "a person to act against his own self-interest." Moral values would be meaningless entities unless this were the case. Nevertheless, in terms of large social groups I think I have to agree, for the most part, with Hardin. Certainly a well informed public is more responsive to the demands of posterity, but even there the lure of personal gain is often simply too strong. We rationalize our participation in "the tragedy of the commons" but inevitably the result will be the same, ruin for all. The short-term gain is simply too enticing.

Clearly, then, the importance of the new technological paradigm becomes a political as well as a moral question. William Ophuls notes that some pin their hopes:

> ...on the development of a collective conscience in the form of a world view or religion that would see man as the partner of nature rather than its antagonist. This will undoubtedly be essential for our survival in the long term, since without basic

> popular support even the most repressive regime could hardly hope to succeed in protecting the environment for long. However, mere changes in world view are not likely to be sufficient. Political and social arrangements that implement values are indispensable for turning ideals into actuality.[6]

What we are dealing with here is a concept of "the common good," which may not maximize any individual's self-interest but ensures that all do not fall into eventual ruin. To do this, that is to protect "the common good" against the claims of individuals we must, as Robert Heibroner says:

> ...discuss the problem of response in terms of the flexibility of the social organizations that mobilize human effort and that powerfully influence human activity, in particular those massive social instruments for shaping behavior we call nation-states and economic systems.[7]

We must, in effect, institutionalize morality, directing human self-interest so that obligations to posterity are fulfilled without ever, necessarily, appealing to conscience.

Indeed, Garrett Hardin, in The Limits to Altruism claims that to ensure that future generations will have available resources we must, in effect, institutionalize inequality:

> It is futile to ask starving people to act against their own self-interest as they see it, which is an exclusively short-term self-interest. In a desperate community long-term interests can be protected only by institutional means: soldiers and policemen. These agents will be reliable only if they are fed up to some minimum level, higher than the average of the starving population. In discounting the future a man's personal discount rate is directly related to the emptiness of his stomach. Those who are the guardians of future stores must be put in a favored position to keep their personal discount rates low-that is, to make it possible for them to believe in, and protect, the future.[8]

Such an attitude, though rationally expressed, seems to strike against our traditional morality. Yet if man is truly incapable of acting morally, at least most of the time, and we really do have an overriding obligation to future generations, it will apparently be up to the politicians to see that the appropriate sacrifices are made. Such an attitude frightens someone like Barry Commoner who places a greater faith in mankind's ability to manage its own moral affairs. For instance, Commoner states:

> If a majority of the United States population voluntarily practiced birth control adequate to population stability, there would be no need for coercion. The corollary is that coercion is necessary only if a majority of the population refuses voluntarily to practice adequate birth control. This means that the majority would need to be coerced by the minority. This is, indeed, political repression.[9]

Certainly someone like William Ophuls sounds threatening to us when he states:

> Under conditions of ecological scarcity the individual, possessing an inalienable right to pursue happiness as he defines it and exercising his liberty in a basically laissez-faire system, will inevitably produce the ruin of the commons. Accordingly, the individualistic basis of society, the concept of inalienable rights, the purely self-defined pursuit of happiness, liberty as maximum freedom of action, and laissez faire itself all become problematic, requiring major modification or perhaps even abandonment if we wish to avert inexorible environmental degradation and eventual extinction as a civilization. Certainly, democracy as we know it cannot conceivably survive.[10]

Clearly, however, I think that Commoner expresses a naive view of politics when he equates "coercion" with "political repression." What Ophuls expresses in the second quotation

is, I think, a clearcut example of the extreme to which government might have to go, in the event of an environmental crisis, simply to save mankind from itself. If this is "repression" the alternative may be far worse. As Hardin says:

> The social arrangements that produce responsibility are arrangements that create coercion, of some sort. Consider bank robbing. The man who takes money from a bank acts as if the bank were a commons. How do we prevent such action? Certainly not by trying to control his behavior solely by a verbal appeal to his sense of responsibility. Rather than rely on propaganda we follow Frankel's lead and insist that a bank is not a commons; we seek the definite social arrangements that will keep it from becoming a commons. That we thereby infringe on the freedom of would-be-robbers we neither deny nor regret.[11]

Clearly it is the responsibility of the government to see that the "common good" is always maintained, and we grant to the government the coercive force to do this. Indeed, if Commoner read Hardin a little more carefully I believe he would find that Hardin hardly contradicts his own views when he states:

> To many, the word coercion implies arbitrary decisions of distant and irresponsible bureaucrats; but this is not a necessary part of its meaning. The only kind of coercion I recommend is mutual coercion, mutually agreed upon by the majority of the people affected.[12]

Surely this view is much "milder" than that expressed by some of the more "pessimistic" writers such as Ophuls or Heilbroner.

What I am uncertain of is whether "mutual coercion mutually agreed upon" provides a framework sufficient for the implimentation of a technological program or plan designed to favorably resolve an environmental crisis.

If "the common good" includes the good of those not yet born then I wonder whether the majority, even paying lip service to this truth, has sufficient moral strength to properly guide their own behavior through political channels so as not to violate the common good in this sense. Perhaps Ophuls and Heilbroner are correct when they warn that we are heading for some form of "authoritarian" government. This may be simply to protect our own future in a world of increasing scarcity; as Heilbroner explains:

> ...if the stakes are not those of pleasure but of survival, if the absolute top priority becomes the matter of self-preservation rather than the preservation of the more agreeable aspects of our self-indulgent culture, then I am inclined to believe that the saving element in "human nature" is likely to be that very capability for identification which, in its present political manifestations, also poses some of the most dangerous challenges for the immediate future.[13]

This in itself does not necessarily mean inevitable "political repression," though the danger is certainly there. The important question is, of course, for the purposes of this paper, can we be certain that such a government will have the interests of posterity in mind? Or would such a government merely represent the efforts of the survivors struggle to grab the last available resources before civilization expired? While the strict mandating of moral principles through law may be the only means by which to protect posterity's interests we must be aware of the question, as Hardin puts it: "Who shall watch the watchers themselves?"[14] Ideally, those with the strongest moral sense, those who hold the new paradigm in the highest light, ought to be the rulers. Indeed this fact would be part of the paradigm itself. Such a

person would pursue not only the common good of those living, but the good of those yet to live. If a culture can not do this it is doomed to extinction. Today the entire species of mankind may similiarly be at stake.

Unfortunately, we have learned from past experience that the strong man is not always the wise man. Nevertheless, the fate of mankind probably rests with the rulers it chooses now and in the very near future, for better or for worse. As Heilbroner questions: "Is there hope for mankind?" The purpose of this paper has been to point out that unless mankind puts its talents to better use, particularly in the area of scientific achievement, guided by a new moral paradigm, its chances of avoiding environmental catastrophe and civilizational collapse are slim indeed. If the responsibility for our future lies with our rulers, how best can we see that they accept and live by such a new paradigm. Probably only improved education, at this point, offers any hope out of our predicament. As E.F. Schumacher says:

> ...the task of education would be, first and foremost, the transmission of ideas of value, of what to do with our lives. There is no doubt also the need to transmit know-how but this must take second place, for it is obviously somewhat foolhardy to put great powers into the hands of people without making sure that they have a reasonable idea of what to do with them. At present, there can be little doubt that the whole of mankind is in mortal danger, not because we are short of scientific and technological know-how, but because we tend to use it destructively, without wisdom. More education can help us only if it produces more wisdom.[15]

Unless some of this wisdom can filter through to our leaders there probably is no hope for mankind. For surely it is

true, as Robert Matthews states:

> Were the planners gods, they might solve this problem of spatio-temporal scarcity by fiat, but as men, they can best be kings. But they will be kings! The question to be asked is whether we can stop short of making them philosophers as well.[16]

FOOTNOTES

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