AN EXAMINATION OF ECOLOGY, CULTURE, AND MORALITY IN SELECTED ENVIRONMENTAL WRITERS FROM 1945-1981

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By

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PREFACE

Deciding who to include in this project was at first based on a bias of what authors had influenced my own thinking. This list was then augmented by combing the environment sections of several bookstores, asking teachers and friends whose opinions I trust, and noting what names were consistently referred to by environmental leaders. At first the prospect of putting these writers and their incredibly diverse styles, backgrounds, and content into any coherent treatment was overwhelming -- they were all inherently resistant to any simple classification. But the common threads linking them slowly became apparent, defining the criteria for their inclusion:

1) Major works published since 1945.
2) Subject matter (broadly) their perception of human relationships to the natural environment.
3) Writings themselves important influences on developing environmental thought.
4) Thematic similarities--interdependence, humility, urgency.
5) Methodological similarities--incorporating several distinct perspectives, such as science, religion, and history, into one argument.

As will be shown later, the first criterion is not an arbitrary cut-off point but a meaningful one. The second means that these writers expressed their own opinions in their works, thus eliminating environmental journalists such as John McPhee. The third criterion is admittedly a judgement call; these people were <u>important as writers</u> and widely read as such, thus justifying leaving out several people important to the environmental movement, such as David Brower

and Howard Zahniser, whose own writings have been less influential than their other achievements. Finally, the fourth and fifth criteria, and why these similarities occurred, form the thesis of the paper and will be elaborated on throughout.

ACKNOWLEDGEMENTS

There is no question that without the help and guidance of several wonderful people this project would never have gotten off the ground. First of all, I'd like to thank Richard W. Holm, professor of biology, and Anne H. Ehrlich, senior research associate in biology, both of Stanford University, for their cheerful sponsorship, support, and defense of the merits of this undertaking. Without them, and the broad-mindedness of the Committee on Undergraduate Studies of the Department of Biological Sciences, in particular chairman Robert D. Simoni, associate professor of biology, none of this would have been possible, and simply saying thank-you does not seem adequate in conveying my feelings. My parents played a vital role in plunking down teh tuition for the extra quarter needed without a murmur, their love and support unquestioning as always. My housemates, Elizabeth Maxwell and Lael Stone, have continually propped me up through the actual writing, feeding me tea, fixing me dinner, fending off phone calls, and enduring the noise of a typewriter for days on end without a hint of impatience. Robert Cahn, Kenneth Brower, Ernest Partridge, Wallace Stegner, David Brower, and Charles Foster have all graciously allowed me to bounce ideas off of them. Joel Horn, Luke Erdoes, and especially David Kreger greatly helped me organize my thoughts by asking me the right questions, and my debt to them, as they know, is beyond words.

Ever since the first day of classes of my freshman year, when I sat nervously in his English class hoping to get in from the wait-list, Peter Steinhart has unfailingly supported, criticized, and egged-on my interest in environmental writing, and without him I can't conceive of what my four years at Stanford would have been like. Once again, on this project, he has helped me shape, define, and express my ideas from its very conception through reading a nearly final draft, all when he had plenty of deadlines of his own to meet. Once again, thank-you is pitifully inadequate, but it's all I can say.

TABLE OF CONTENTS

CHAPTER I

INTRODUCTION:

THE NEW QUESTION

At 10:30 a.m. I was already a bit desperate. Guiding children at Hidden Villa, a lovely 2000-acre ranch in Los Altos Hills that serves as an environmental education center for Peninsula schools, was one of the most joyous and rewarding experiences of my life, but this day was definitely an exception. My group of second-graders from a wealthy district of Palo Alto, though bright and sophisticated, were also relishing the opportunity to spend a school day free from their teacher's dampening presence. To them, the motto of the day was "flaunt authority." One particularly beautiful and willful little girl named Melissa was the ringleader of this gang--everyone was taking their cue for how they could be obstreperous from her. As we peered into the rabbits' cages and I explained for the eleventh time that no, we couldn't hold any of them today because the babies were too tiny to be handled, Melissa ran to the border of the lane and returned with two handfuls of miner's lettuce, sorrel, and grasses to feed them. Something inside me snapped. I had spent much of the morning trying to introduce the notion of leaving wildflowers and other living things alone, but it seemed that every time I turned around Melissa was clutching yet another handful of greenery. Her enormous blue eyes would fill with contrition when I tried to talk her out of doing it again, and then five minutes later she would grab more. Her compulsion to uproot was convincing me that she would happily grow up to take on the Amazon rainforest as her life's work.

The bright yellow flowers of the sorrel, already drooping, were the last straw. So much for the gentle approach. I took Melissa firmly by the wrist and marched her over to the bank, the other children following in whispers and giggles.

"Now," I said, and stopped. I had already brought up every reason and idea I could think of to persuade her to leave plants be, and all had failed. What was I going to say? I fell back on the old Hidden Villa standby--when in trouble, ask the child questions. "Melissa, why did you do that?"

"Why not?" The huge blue eyes were depthless. It was a direct challenge.

Resisting with difficulty the adult impulse to blurt, "Because," I turned to the other five children. "Well, guys, why not? Why shouldn't Melissa pick all the flowers she wants to?" It was another direct challenge, and a risky one. Melissa was obviously very popular, and it was unlikely that they would say anything to disagree with her.

But I was saved. After a dreadful moment of silence, one of the boys mumbled, "Because they're pretty." Another boy said unexpectedly, "They give off air that we can breathe." And a girl who had scarcely said a word all morning declared, "Because they want to keep growing and we shouldn't kill them."

Coming from peers, the same ideas I had been trying to introduce took on new meaning. Melissa was silent, and did

not pick any more flowers that day.

Hidden Villa as a rule does not attempt to indoctrinate children with inviolable rules of right and wrong, but instead encourage them to express their own ideas of what their relationship to the natural world is and, more importantly, what it ought to be. The assumption is that their answers to this question are important, both to their individual futures and the future of civilization as a whole. Programs like Hidden Villa's did not exist thirty years ago because this question was almost never asked; the environment (literally, that which surrounds) was taken for granted, viewed as a collection of scenes or a source of materials and wealth, but always something to which our relationship could be passive or exploitative rather than active and thoughtful. In the past few decades, however, modern civilization's capacity to alter or destroy much of the natural environment has endowed such a question with sudden importance. As a people, we are asking more and more: What is humankind's proper attitude toward the natural world, and how ought we behave toward the plants, animals, and entire communities of living things, as well as inanimate features such as rivers and mountains, that exist on the planet with us?

Like the children who dissuaded Melissa, those who attempt to answer this question are apt to use several different rationales. They may consider beauty, and what the opportunity to see and experience wild things can mean.

They may look at the practical value of intact living systems performing ecological tasks vital to humankind. And they may examine the moral question of whether sorrel and sequoia, butterflies and baboons have a right to be left alone or at least treated with respect simply because they exist as fellow forms of life.

Answering the question of how we ought to treat the earth is thus not the prerogative of any single discipline. Science, especially biology, can sketch the outlines of some of it, probing how ecosystems function and the secrets of the inner workings and chemistries of life itself. History and anthropology can teach us much about how other cultures have viewed and treated the environment, and their relative successes and failures. Religion, myth, and poetry have grappled with these kinds of questions for centuries, while the detailed observations of those who have spent much time listening to and watching the harmony of life around them, whether in gardens or great empty wildernesses, have their own insights to contribute.

A knitting has been going on, an attempt to bring together the various strands of biology, poetry, history, and religion into a fabric of environmental thought. Several people not only saw such weaving was necessary but expressed the patterns they came up with in written words, creating a genre of environmental literature that has particularly grown in the post-World War II era. These writers vary a great deal in their styles, immediate subject matter, and

intellectual background, and no two patterns are quite alike. But more interesting than their differences is the remarkable unity they show in their conclusions and in their willingness to draw from all aspects of human experience to get there. The purpose of this paper is to examine these environmental writers and not only trace their similarities but show that both the themes they share and their synergistic blending of different perspectives were a necessary response to a world where old explanations and methodologies seemed not only inadequate and unsatisfactory, but chronically destructive as well.

The 1940s saw a world in which industrial growth was on the upswing, medical breakthroughs in curing disease became commonplace, materials could be synthesized if needed, energy was plentiful, and the takeover of America by the automobile, television and home appliances had begun. Technology was king; science could solve all our problems; and human potential seemed unlimited. It was also a world which had just absorbed the atrocities of Hitler and Hiroshima with no perceptible lasting change, no disturbance of the turning of seasons or flow of rivers. Anything indeed seemed possible in this world, whether marvelous or evil. In the midst of such paradox, the bewildering mix of heady discoveries and inconceivable horrors, a backlash to the universal faith in technological progress began. A discontented few saw this sudden concentration of power to devastate the world in the hands of imperfect mortal men with terror, and

sought a safer, saner view of man's relationship to the planet he lives on as an alternative to what seemed to be a specter of automation, alienation from human values, and disinterest in looking at nonhuman life and processes in the world. An enlarged view was needed to make sense out of all this, said these uncomfortable voices--a view which placed humankind not at the center of all things but somewhere on the periphery, a paradigm shift as profound and far-reaching as that of making the sun, not the earth, the center of planetary orbits.

As a means of first-order analysis of these writers' works, three distinct perspectives on what the relationship between humans and the environment should be can be detected in them. One rests on biological and ecological facts that science has uncovered; one incorporates an understanding of the psychological and cultural needs of Homo sapiens; and one originates from innate religious or quasi-religious beliefs and mystical intuitions springing from direct contact with the natural world. All can be used to form persuasive arguments that civilization can not continue to value the environment in the same way it does now without eventually paying a heavy price.

The first perspective is that of ecology, or the science of the structure, organization, and function of living things and their relationships to each other and the abiotic environment. Modern ecology is a functional rather than descriptive aspect of field biology, a dynamic rather

than static approach. It is less a subject matter than a point of view. If the biotic world is classified into a hierarchical series of levels of organization or functional units, ecology's scope begins at the level of the organism and proceeds up through populations, communities, ecosystems, and finally the biosphere. Ecologists study these functional units according to how they change, flow, behave, or adapt through time. They are interested in how biological structure relates to function, or how the different characteristics of organisms or ecosystems relate to what they do--for example, how a lizard keeps from overheating in a desert, or how a pond transfers energy and materials over time.

If the human species is now viewed as one of these biological parts, an argument I will refer to as ecological utilitarianism can be constructed on the premises of ecology. All living things process matter and energy within a highly complex and interlocked total system whose continued proper functioning depends on the actions of all its component parts. Interference in the structure of the natural world may create consequences of altered function that are unforeseen because we do not understand all the ways in which this system works and cannot predict with certainty what the long-range effects of any modification may be. For example, cutting down the Amazon jungle and converting it to grazing lands is a structural change in the world ecosystem that may alter global weather patterns or atmospheric carbon

dioxide concentrations. Therefore, for our own good, we ought to maintain a healthy respect for the life-support system we depend on and caution in our tamperings with it. Failure to incorporate the ecological realities of interconnectedness and human dependency on an intact functioning planet in our economic, political, and social behavior could threaten human survival.

Ecological utilitarianism does not go any farther than saying it is in our own best interests to recognize the limits of natural laws and the planetary ecosystem we exist within. It challenges only the extent, not the morality, of the current assumption that we can and should modify the earth to suit ourselves. Since its principles can be scientifically demonstrated and rationally explained, and since it is at heart a sensible, homocentric argument, it has been the most widely accepted of all the rationales for a change in humankind's perception of the earth, although it is by no means the dominant attitude setting policy today.

A second perspective is based on the apparent psychological and cultural needs of human beings to feel some kind of direct contact with natural landscapes, greenery, and animals. The desire for quiet, pleasant surroundings to live in, the craving for lush gardens and desolate wild areas, the longing for solitude in wilderness are all not replaceable luxuries or frivolous wants but deep-seated needs of the individual human psyche and society as a whole, bred into us by our cultural and biological history. The

chance to go camping in a quiet forest or build sand castles along an undisturbed beach is not only desirable but absolutely necessary if our sanity and health as a people is to be maintained.

With this as their principle assumption, proponents of this view fear the dehumanizing effects of more and more industrialization, urbanization, and technology continuing to exacerbate the alienation from simple ways of life and contact with wild things in our society. They see people's well-being and the quality of life deteriorating as more and more natural landscapes and the opportunities to enjoy them disappear. Wilderness and open, pastoral countryside must exist alongside civilization in order to put it into perspective; vistas from mountain passes and the interplay of fields, fencerows and woodlots are a necessary complement to skyscrapers. If we eliminate them, we are eliminating part of our heritage, the context out of which we evolved, and denying future generations an experience which cannot be replaced.

This perspective has been a powerful one, motivating early conservationists long before ecological principles had been clearly established. But because its values are less easily translatable into direct practical benefits, and its principle assumption--all humans require periodic interaction with nature--is impossible to demonstrate in the same precise way that ecological facts can be, it is more vulnerable to attack by those who prefer to believe that it

isn't so.

A third perspective is even farther removed from practical considerations, but is the most ancient source of environmental philosophy. The religious or mystical perspective holds that all people, plants, animals, and other aspects of creation form a unified, spiritual whole the way prism colors blend to form light. In its religious forms, this is sometimes expressed as a polytheism or animism, with the belief that a divine spirit inhabits all things or that God is everywhere, manifested in His works of nature. In its more secular, contemporary forms, this belief ascribes some form of consciousness or spirit to living things, especially animals, some force or energy within them affecting humans that can be sensed by non-rational means. We are moved when we watch sea otters play with their young and delighted when purple martins choose to set up house in our backyards. We are drawn by the glimpse of a bear across a meadow and the call of owls reaching us in our snug houses. A feeling of kinship for other creatures leads to compassion, respect, and finally reverence for life and the right of nonhuman things to exist regardless of how they affect human lives. And even if hummingbirds and buffalo are not believed to have consciousness or spirit, it may feel wrong in a very basic, moral sense to needlessly persecute them. Such feelings imply a humility and respect for the wonders of creation which we belong to and share in. Although passivity in our relationship to the earth is not necessary, we are

morally responsible to not wantonly destroy other forms of life, and even in our use of them acknowledge and respect the life there.

Obviously the least rational of all arguments for a new conception of the environment, this position is open not only to attack but to ridicule. However, these fundamental attitudinal and moral ideas seem to be an unavoidable component of all careful looks into the nature of this problem; they stubbornly recur in many serious writers. Proponents of this perspective share an uncomfortable feeling that our actions are going against our own intuitive empathies for living things, and perhaps the will of God.

Upon close inspection, these three viewpoints are not as different as they seem. Though based on disparate kinds of evidence and phrased in conceptual languages usually considered antithetical, three common themes--interdependence, humility, and urgency--emerge that cut across their dissimilarities and link them together.

Interdependence postulates a total external order in the world which all living and nonliving things are a part of, with subtle interrelationships between individual parts crucial to the integrity of the entire system. The human species is included within this total order, not outside, above, or in any way separated from it. In an ecological view, the functional nature of the biosphere dissolves any sharp separation of the welfare of humans and the welfare of the planet. Cultural arguments say that actions which

diminish the beauty and other special qualities of natural environments will also diminish the human spirit because they are inextricably linked. And the spiritual perspective also closes the gulf between humans and the rest of creation by extending the potential for consciousness and its accompanying moral obligations to the entire spectrum of life.

Humility is the second common motif; with the understanding that humans are connected to the nonhuman environment rather than isolated from or above it comes humility, a new respect for the mysteries of creation which we are a part of but do not understand. This also implies a sense of restraint and limitations on how drastic our modifications should be, because of a nagging suspicion that not only do we not understand everything about our existence in the world, our capacity to analyze and predict may actually be inadequate to ever fully understand what we're doing when we transform the earth. The ecological perspective acknowledges humility in its forthright acceptance that science does not know enough to be able to predict the ecological consequences of all actions, and may not ever be able to. Cultural arguments call for a new respect for the forces of nature that shaped us and a realization that without contact with them we may lose human qualities that we cherish. And a religious or moral perspective suggests a worshipful attitude toward the mysterious energies and truths in the world that fall outside rational understanding.

The final unifying theme, urgency, is the driving force

behind all of these arguments. These are not just interesting, esoteric, philosophical niceties but urgent questions whose answers may guide us in making real-world choices and decisions that we have never faced before. Most of our actions do not reflect an understanding of interdependence or humility, and we are in trouble, or getting there, because of it. Ecologically, we do not include the services living systems performed in our economic or political accounting, leading to their demise. Culturally, we may be threatening the quality of life and basic human values by destroying the natural world we evolved within. And morally, we may be committing repugnant wholesale slaughter of other conscious beings or sinning against the intent of God by eliminating so many other forms of life so carelessly. Urgency is what brings scientists, poets, historians, and naturalists together to protest the current norms of behavior towards the earth. For whatever reasons, they are all worried.

Though these themes are not new to this century, they have acquired new impetus from the dawning of an era when human hubris, control, and dominance over the earth seemed most assured. All the writers treated here dwell on these three themes, although they do not share a unified "super environmental ethic" that everyone agrees on. Chapter II, "Our Own Best Interest," looks at seven biologists who begin with ecological utilitarianism; Chapter III, "The Needs of a People," examines five authors who write of the cultural

importance of natural landscapes and wilderness; and Chapter IV, "A Secular Pilgrimage," deals with three writers and a smattering of poets who depict their emotional and mystical feelings for nature.

It must be stressed, however, that none of these authors fit into neat categories, and this is itself their most unique characteristic. Nearly all attempt to combine some proportion of ecological, cultural, and religious perspectives into a coherent, persuasive appeal. David Ehrenfeld, a scientist, speaks of our moral obligations to recognize the rights to existence of other living species. Annie Dillard, a poet, recognizes the ecological necessities of predation and death and tries to deal with the paradoxes they create. Anthropologist Loren Eiseley writes poetry, poet Wendell Berry writes cultural histories, and ecologist Aldo Leopold moves dauntlessly into ethical philosophy. They have all made concerted efforts to synthesize the teachings of disciplines other than their own and try their hand at them in the belief that such synthesis was <u>absolutely necessary</u> to address the new problems created by modern technological civilization.

The world had changed. The old categories, the old divisions, and old perceptions no longer made sense. Restless within their own pursuits, they felt that one-dimensional analyses were hopelessly inadequate, that the answers would not lie in one realm of human thought but in all. And so they reached out, intermingling science and

religion, poetry and ecology, a sense of history and a feel for the present. Out of this witches' brew have come the first gropings toward a true answer to Melissa's defiant question.

CHAPTER II

OUR OWN BEST INTEREST

EUGENE ODUM

ALDO LEOPOLD

CHARLES ELTON

RACHEL CARSON

DAVID EHRENFELD

PAUL and ANNE EHRLICH

I will never forget the softspoken patience of my population ecology professor on the first day of lecture, when he explained that contrary to what we might have heard, ecology was not a synonym for conservation or environmental concern, but a biological discipline with a strong theoretical base. His slight weariness was understandable; for a time, it seemed that anyone, plumber, politician or preacher, who breathed a word about population control, pollution, or limits to economic growth was labeled an "ecologist," and enough of this usage remains today to make "real" ecologists a bit sensitive to these popular associations. For all that, however, there were solid reasons why ecology had become such a buzzword during the heyday of a burgeoning environmental movement in the 1960s and 1970s. At the root of many of the new ideas and arguments for a gentler treatment of the earth were the biological facts ecology had begun to reveal.

The word "ecology," stemming from the Greek "oikos" meaning "house" and "logy" meaning "the science of," was first coined by the German biologist Ernst Haeckel in 1866, but credit for early ecological concepts probably belongs more to Charles Darwin, who described in Origin of Species (1859) the complex interrelated nature of living things and their tendency to evolve through interactions with each other and the environment into stable and diversified living systems.[1] Neither the word nor the idea of a separate science concerned with the relationships of organisms caught

on for quite a while, however. Around the turn of the century, several botanists studied the succession of vegetation patterns, and a few zoologists began to describe the distribution of animals in different environments, but ecology remained primarily a rather minor branch of descriptive biology instead of a functional approach to studying the characteristics of entire living systems. The British ecologist Charles Elton's 1927 work, Animal Ecology, helped advance this new functional viewpoint. In the 1930s evolutionary and ecological evidence began to come together to form a unified body of science that emphasized such integrative concepts as food chains and the dynamic interchange of nutrients and energy.[2] However, until relatively recently ecology was a rather obscure academic subject, not well known even among biologists, until its social and philosophical ramifications began to take root and grow. The 1961 Complete Oxford English Dictionary does not even list the word. But by 1970 it could be found on the lips of housewives and Presidents of the United States.

Eugene Odum (1913-)

One scientist who helped cause this transformation was the American ecologist Eugene Odum, whose textbooks Fundamentals of Ecology (first edition, 1953) and the shorter Ecology (first edition, 1963) served as standard texts on the subject for several generations of students. Odum helped pioneer research in ecosystem ecology, studying the

dynamics of overall energy flow and productivity in ponds and marshes. But he is included here for his outspoken expression of a persuasive brand of ecological utilitarianism.

Odum raises ecology from the status of a branch of biology to an interdisciplinary science linking the biological, physical, and social sciences. Defining ecology to be "the study of the structure and function of nature," he makes it clear in ensuing definitions that the function half of the definition is of more interest to the ecologist than structure.[3] For example, ecological classifications of organisms are made on the basis of trophic levels or source of energy rather than taxonomic structure or evolutionary affinity. Deer, finches, and cutworms can all be ecologically classified as primary consumers because they all eat plants, even though their structures are very different.

Along with this emphasis on function, Odum portrays ecology as a holistic discipline in contrast to reductionist science, introducing what he calls the principle of integrative levels: "as components combine to produce larger functional wholes in a hierarchical series, new properties emerge;" or, more colloquially, "the whole is more than a sum of the parts."[4] This theory holds that not only is it unnecessary to understand everything about lower levels of organization in order to study the characteristics of a particular level, such understanding is theoretically incapable of predicting the new properties that occur at higher

levels. For example, one can never explain all the phenomena that occur on the community level by trying to "add up" knowledge of its component populations, even if such summation was possible. Like Heisenberg's uncertainty principle in quantum physics, this concept throws a curve in reductionist science.

It is worth noting that this is a controversial idea even among ecologists, as biologists have argued the merits of holism and reductionism in their various guises since Aristotle. Reductionism is the dominant philosophy of biology today, and can be summarized in its modern form as the belief that scientific study, in its search for principle causes, will eventually "reduce" the explanation of life to a physiochemical basis. As one reductionist biologist puts it, "We are working with physical phenomena entirely accessible to our understanding... the main features of terrestrial life are within the perceptible grasp of molecular biology."[5] In contrast, holism holds that the organization of living things is qualitatively different than that of physical structures, and that this organization produces properties that cannot be explained on a lower level. Many biologists, including Odum, are trying to resolve this ancient feud by claiming that both are necessary and both have their limits. "Perhaps the major role of the ecologists in the near future is to promote the holistic approach to go along with the reductionist approach now so well-entrenched in scientific methodology," says Odum.[6]

Odum stresses that Homo sapiens is a "dependent heterotroph" who participates in the processes of cycling materials and converting energy.[7] Lessons learned from ecology are directly applicable to humans because we are fundamentally the same as other species in the way we eat, respire, accumulate matter, and discharge wastes. Cities can be viewed as "man-subsidized urban-industrial ecosystems," and the human species can be likened to a parasite that must achieve a mutualistic relationship with the host (the earth) in order for both not to perish.[8]

Odum also makes clear that because of the constant matter and energy exchange between the abiotic and biotic parts of the world, the whole notion of a sharp demarcation between "humans" and "environment" dissolves--what one day is mercury in the ocean may be in a shellfish the next and lodged in human bone marrow the next. This separation also breaks down, says Odum, because "organisms are not just passive actors in a physical and chemical milieu, but are active participants in the regulation of their own environment."[9] The problems now facing humans result from their modifications having ignored ecological common sense. For example, modern intensive agriculture amplifies the flow of materials through a particular system and increases productivity, but fails to allow for any return or recycling of those materials back to the land.

Throughout his textbooks, Odum is forthright in reprimanding humankind for this kind of ecological irresponsibil-

ity and making pointed suggestions for correcting these imbalances. His main call for change is the redistribution of monetary values to include ecological goods and services within normal economics.

> Natural, self-sustaining solar-powered ecosystems have a direct value to man for their life support and waste assimilation capacities as well as for their food, fiber, or recreational potential....there is an urgent need to incorporate the work of nature into the economic value system so that costs and benefits can be assessed for the interdependent urban-rural complex as a whole.[10]

Practically-speaking, we would be foolish to not make our actions conform to ecological realities and to ignore the long-range utility to man of preserving a healthy planet. Notice, however, that Odum's proposals do not enter an ethical realm--natural systems have not suddenly acquired inherent values apart from their service to humankind. As a source of vital goods and services, the environment can be treated as an economic entity, subject to monetary rather than moral evaluation. But the services it provides are more subtle and extensive than realized before.

Aldo Leopold (1887-1948)

Ecologist, wildlife manager, and philosopher Aldo Leopold's influence on environmental thought is difficult to overstate. With the possible exception of nineteenth-century transcendentalist Henry David Thoreau, no other author is as often quoted by later writers. As a result of his experience as a forester and game manager, Leopold embraced the fledgling science of ecology and made it the framework for the

conservation philosophy expressed in his piquant collection of essays, A Sand County Almanac (1949), which many consider to be the Bible of a modern environmental ethic.

Although Leopold also saw the long-range utility to humans of acknowledging the functioning of natural ecosystems in our lives, he was an ecological utilitarian with a twist. Merely restructuring our economic and governmental systems to incorporate the monetary values assigned to natural goods and services would not be enough. An ethical relationship to land on the part of each person would be necessary for civilization to live in harmony with it. That is, it would be in our own best interest to cultivate an ethical feeling for the land. But though he emphasized utility, Leopold was not content with it as justification for this change:

> We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect. There is no other way for land to survive the impact of mechanized man, nor for us to reap from it the esthetic harvest is is capable, under science, of contributing to culture.
>
> That land is a community is the basic concept of ecology, but that land is to be loved and respected is an extension of ethics. That land yields a cultural harvest is a fact long known, but latterly often forgotten.
>
> These essays attempt to weld these three concepts.[11]

Ecology was the central gospel to Leopold, and he uses the word reverently although, as his biographer Susan Flader has pointed out, "Leopold may be said to have been thinking ecologically, in the functional or holistic sense, before

ecological science had evolved a conceptual framework capable of supporting such thought."[12] Leopold celebrates each ecological part of the world that "does a small job quickly and well."[13] Ecological perception of the collective behavior and functioning of the natural world "has wrought a change in the mental eye. It has disclosed origins and functions for what [previously] were only facts."[14] This new perception means that instead of science learning "more and more about less and less, we must learn more and more about the whole biotic landscape."[15] He is saddened that such science is little encouraged:

> Each [professor] selects one instrument and spends his life taking it apart and describing its strings and sounding boards....a professor may pluck the strings of his own instrument, but never that of another, and if he listens for music he must never admit it to his fellows or to his students. For all are restrained by an ironbound taboo which decrees that the construction of instruments is the domain of science, while the detection of harmony is the domain of poets.[16]

Reductionist science, says Leopold, is more interested in making zoology students memorize the bumps on cat bones than learning how the land functions.

Leopold stresses that taking ecology into account will pay off economically. For example, in deciding what trees to replant in a logged forest, while an alder might be worth less than a pine, its function of maintaining the soil and thus a healthy forest ecosystem may make it valuable nevertheless. Our failure to take these considerations into account, and the unprecedented extent of our tampering with

soils, forests, and waterways is creating an unpleasant pickle. Interestingly, Leopold is not a doomsayer--there are no visions of mass famine or complete contamination that surface so often in later writers. He does, however, say that a change now will avoid problems in the future, and that the situation is urgent enough for ecologists to speak up:

> One of the penalties of an ecological education is that one lives alone in a world of wounds....An ecologist must either harden his shell and believe that the consequences of science are none of his business, or he must be the doctor who sees the marks of death in a community that believes itself well and does not want to be told otherwise.[17]

To Leopold, ecology was the first step along a road to an expanded system of ethics. This new knowledge should give us "a sense of kinship with fellow-creatures; a wish to live and let live; a sense of wonder over the magnitude and duration of the biotic enterprise."[18] Here science serves as a springboard for feelings--kinship, charity, wonder--about the natural world for those who never possessed them before, feelings that can be woven between the strong supports of rational ecological principles.

Such an ethical change is necessary, says Leopold, because the time has come when we must cooperate with rather than struggle against the land, and all cooperative relationships have ethics that go with them. "Land ethics simply enlarges the bounds of the community to include soils, water,

plants, and animals, or collectively: the land," he says.[19] These ethics spring from being directly exposed to the land, and must always be felt from within rather than be handed down by some governmental body. They are particularly needed now as our new capabilities get us into more and more complex and unfamiliar situations; when confronted by an ecological decision too complicated to figure out rationally, we can fall back on ethical guidelines--"a kind of community instinct-in-the-making."[20]

Leopold hints that ecology is so hopelessly complicated that no individual can possibly be expected to know all the effects of an action he takes, and so needs to develop a kind of ecological rule of thumb. Even if we all wanted to practice an enlightened utilitarianism and use ecology to weigh the merits of each choice, we would get bogged down under the sheer enormity of the task, and like those who practiced the early conservation theories of "enlightened self-interest," still end up mistreating land out of sheer ignorance. "The biotic mechanism is so complex that its workings may never be fully understood," says Leopold, and thus, as "intelligent tinkerers," we should keep as many of the parts intact as possible.[21] The only way out of this problem is resorting to ethical intuitions. He criticizes any conservation system which:

> defines no right or wrong, assigns no obligation, calls for no sacrifice, implies no change in the current philosophy of values....No important change in ethics was ever accomplished without an internal change in our intellectual emphasis, loyalties,

> affections, and convictions. The proof that conservation has not yet touched these foundations of conduct lies in the fact that philosophy and religion have not yet heard of it. In our attempt to make conservation easy, we have made it trivial.[22]

Aldo Leopold's famous prescription, "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise," is his version of a rule of thumb.[23] But at least two other ideas are pulled in here other than preserving ecological stability--that of aesthetics and "integrity."

The first is fairly straightforward--Leopold spends some time explaining the cultural harvest of wild things, the needs of people to look at beautiful scenery, and the value to society of wilderness. As one of the nation's earliest and most influential wilderness defenders, he was practiced in bringing in recreational, scientific, historical, and other types of arguments for preserving land, for "wilderness is the raw material out of which man has hammered the artifact called civilization."[24]

The notion of integrity is somewhat more mysterious. Here Leopold seems to be abandoning all forms of utility arguments and saying that while behaving ethically toward land will surely be good for us in the long run, it is worth doing for its own sake as well. "No ethical relation to land can exist without love and respect for it, and a high regard for its value. By value,...I mean value in the philosophical sense."[25] There are two possible interpreta-

tions to this. One is that this philosophical value is based on its ecological utility and ultimate value to humans. But another is that an organism such as the tiny prairie flower Draba that Leopold is fond of has a right to continued existence for its own sake. In this case integrity could be interpreted to mean something closer to a religious belief in the brotherhood of all things.

There is some evidence for this in his earlier essays, as Leopold seems to feel much intrinsic worth in wild creatures. The grebe's music in the Clandeboye marsh is a mystery "calling for translation and understanding."[26] Cranes call out to him from across the reaches of evolutionary time. More than just beautiful, their quality lies in the "higher gamut" of "values as yet uncaptured by language."[27] Leopold clearly feels a kinship to wild things beyond what his rational knowledge of ecological interdependence has given him.

But what, if any, spiritual qualities Leopold ascribes to animals, plants, rivers and mountains are complex and not easily understood. Though chickadees are not small human-like spirits bundled in feathers, as chickadees they do possess some kind of personality. While walking near pines he feels "a curious transfusion of courage from their presence."[28] Quail and deer could have "festival moods" that were transferable to the humans around him.[29] He describes how certain creatures--grouse in the woodlot, parrots in the Sierra Madres, jaguars in the southwestern forests--are the

numenon or spirit of the landscape. When removed, "some kind of motive power" is lost.[30] And when Leopold saw the green fire go out in a dying wolf's eyes that he had shot, he experienced a revelation, a glimpse of a mystery which triggered the beginning of his ecological and ethical attitude toward all creatures.

It is difficult to know how much to read into this. Was Leopold simply using expressions such as grieving mice and contemptuous wolves for literary force, as figures of speech, or was he consciously ascribing the ability to animals to feel grief and contempt?

One explanation is that he was conscious of it, but deliberately downplayed his own feelings and beliefs along these lines for fear of letting them taint his rational, utilitarian arguments in his later essays. He may have accepted the possibility that nonhuman creatures had complex, emotional lives and thus a right to exist for that reason, but considered it a mystery he could never pretend to know or hope to convert others to believing. Meanwhile, the practical, ecological reasons for developing an ethical feeling for land were already revolutionary and powerful enough to make a good case. These essays, he says, "set forth some of the ideas whereby we dissenters rationalize our dissent." (emphasis mine).[31]

At times Leopold recognizes that such rationalizations, even good ones, have their pitfalls. More ecology brings the danger of replacing intuitive feelings for the land with

scientific objectivity, at times demystifying the qualities of the natural world and leaving us with a sense of loss. There is a resigned awareness in Leopold that as the science of ecology marches on, less and less room will be left for feelings for nature, because rational explanations will always take precedence over emotional ones, and "the Ph.D. in ecology may become as callous as an undertaker to the mysteries at which he officiates."[32] At times he seems quite glad that we do not really know much about ecology. While a little knowledge leads to increased appreciation, too much may be undesirable, and "it is fortunate, perhaps, that no matter how intently one studies the hundred little dramas of the woods and meadows, one can never learn all the salient facts about any one of them."[33] Ecology may exacerbate the analytic gap between people and environment when what he would really like to foster is closeness and unity. At least for now, however, Leopold suggests that we are in no great danger of overdoing our ecological zeal--we have barely even begun it.

Charles Elton (1900-)

Though Leopold synthesized arguments from ecological utility, aesthetic considerations, and the moral need to respect the integrity of living things, he stressed utility in his later essays. Charles Elton, a British ecologist mentioned earlier as one of the pioneers of a functional approach to ecology, is credited with having set out with

absolute clarity the three kinds of reasons and elevating the religious and aesthetic arguments to a nearly equivalent status as practicality. His book The Ecology of Invasions by Animals and Plants (1958) is primarily an academic treatise of plant and animal biogeography, giving case studies of "ecological explosions" of species from outbreaks and introductions, and some theoretical considerations of the balance of populations. Tucked in the back, however, is a chapter entitled "Reasons for Conservation," which he defines as "some wise principle of coexistence between man and nature, even if it has to be a modified kind of man and a modified kind of nature."[34] He grants that this may be possible in the future, but it will require the examination of "three absolute questions that sit rather patiently waiting to be answered."[35]

The first is the moral or religious one--what kinds of rights are we willing to grant other species? As Elton says,

> The first, which is not usually put first, is really religious. There are some millions of people in the world who think that animals have a right to exist and be left alone, or at any rate that they should not be persecuted or made extinct as a species. Some people will believe this even when it is quite dangerous to themselves. Efforts to control plague rats in some Indian warehouses have sometimes been frustrated because the men in charge put out water for the rats to drink. Ideas of this sort will seem folly to the practical Western man, or sentimental. Yet who can really stand up and call them just sentimental when a great scholar and prophet like Dr. Schweitzer says "The great fault of all ethics hitherto has been that they believed themselves to have to deal only with the relation of man to man?"[36]

The second question is the aesthetic and cultural perspective:

> Nature--wildlife and its surroundings--is interesting, and usually exciting and beautiful as well. It is a source of experience for poets and artists, or materials and pleasure for the naturalists and scientists. And of recreation. In all this the interest of human beings is decidedly put first.[37]

The third question is the practical fact that humans depend on forests, water, crops, fisheries, and so forth to live. At first he says "this third question seems to hang over the whole world so threateningly as to take the light out of the other two," because of the seriousness of the human population problem and the poverty of much of the world.[38] Elton clearly sets a priority on human survival in his summary of the three perspectives:

> You may think the astonishingly diverse life of the globe was not evolved just to be used or abused, and perhaps largely swept away. You may take the view that it is all so interesting and beautiful that it should be preserved, especially preserved for posterity to enjoy. This is not an uncommon attitude in the richer countries, but finds much less favour in those where making a living at all comes first. But wherever you live these practical problems have to be dealt with first. People do have to grow things in order to live and make a living, they need land, and good crops. It is no use pretending that conservation for pleasure or instruction, or the assigning of superior rights to animals, will ever take precedence over human survival. Nor should it.[39]

Then Elton proceeds to draw together the three reasons into what he calls a fourth point of view, actually an ecological extension of the practical one. It is possible to make a good case for conservation on a combination of all three reasons: "because it is a right relation between man

and living things, because it gives opportunities for richer experience, and because it tends to promote ecological stability--ecological resistance to invaders and to explosions in nature populations."[40] Having spent an entire book detailing the often nasty effects of such explosions, and the "terrific dislocations in nature" man is now causing, he then offers scientific evidence that such a correlation between stability and diversity exists.[41] Though this is yet an unresolved debate in ecology, the point is that Elton was promoting utilitarian ecological arguments to complement the aesthetic and religious ones.

There are several things to note in this. One is that Elton's discussion of the rights of animals to exist is on the level of the entire species' or population's rights, not necessarily the rights of an individual creature. We may catch one butterfly if we are sure they are plentiful, but deliberately driving a population of them to extinction is a different ethical matter. Secondly, the aesthetic and especially religious reasons are more openly articulated and given more weight than in Leopold; we ought, says Elton, to preserve some natural communities whether or not we can show that it is in our long-range interests to do so. The third is that while basic human needs are given top priority, human desires, whims, and wants are not mentioned. While Elton might bow to the necessity of bulldozing a grasslands area that contained endangered butterflies if it were clearly demonstrated that some people would go hungry if they couldn't

grow food there, he might question destroying the area for the sake of a golf course on the basis of the moral and aesthetic reasons. This is an important distinction which is never clarified in Leopold, who at one point simply says that "economic feasibility limits the tether of what can be done for land," leaving open to question the economics of luxury as well.[42]

Rachel Carson (1907-1964)

One gauge of Rachel Carson's influence on environmental thought is that publishers often try to promote new books on environmental problems with the banner, "The most important book on the environment since Silent Spring..." Rachel Carson was a biologist with the U.S. Fish and Wildlife Service, but she was also a writer who felt very deeply about the beauty and magic of the natural world. A tension between a scientific, analytical mode and an urge to express her feelings appears in all her works. Of her four books, three were written out of love, the fourth out of anger; the former, Under the Sea-Wind (1941), The Sea Around Us (1951), and The Edge of the Sea (1955) are marvels at the intricate life found in and around oceans, while in the latter, Silent Spring (1962), Carson vents cold fury about the chemical poisoning of the environment, especially by the common pesticide DDT (dichloro-diphenyl-trichloroethane).

The sea books illuminate Carson's deeply felt identification with and love for wild creatures, her feelings that

they have emotional lives, and her awareness of some inner meaning and significance, some universal truth lying hidden in nature. The shore is

> a world that keeps alive a sense of continuing creation and of the relentless drive of life. Each time that I enter it, I gain some new awareness of its beauty and its deeper meanings, sensing that intricate fabric of life by which one creature is linked with another, and each with its surroundings.... Underlying the beauty of the spectable there is meaning and significance. It is the elusiveness of that meaning that haunts us, that sends us again and again into the natural world where the key to the riddle is hidden.[43]

Silent Spring is out to accomplish something quite different. Though Carson uses strong, passionate language, she keeps her head about her and details the current abuse of herbicides and pesticides in a difficult-to-ignore utilitarian manner. Clear throughout is the understanding that "man, however much he may like to pretend the contrary, is part of nature."[44] She warns that our indiscriminate spread of toxic chemicals shows that we are cut off from our ties to the earth, "blind even to the most essential needs of survival," and we may soon successfully eradicate ourselves along with the potato beetles and ragweeds if we don't watch out.[45]

Carson displays a real fear of and revulsion for the concentration of power to wreak such havoc in the hands of a few of the chemical purveyors, who lack "humility before the vast forces with which they tamper... The control of nature is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that

nature exists for the convenience of man." She asks rhetorically who made the decision to produce a sterile, insect-free world, and answers, "The decision is that of the authoritarian temporarily entrusted with power; he has made it during a moment of inattention by millions to whom beauty and the ordered world of nature still have a meaning that is deep and imperative."[47]

Drawing on Charles Elton for much of her evidence, Carson advocates a prudent method of pest control where the severity of measures matches the severity of the problem, and which incorporates as much awareness of ecology as possible. Humans can't avoid transforming the environment, she says, but "we should do so thoughtfully, with full awareness that what we do may have consequences in time and space."[48] The moral argument surfaces occasionally as well, as when she says "The question is whether any civilization can wage relentless wars on life itself without destroying itself and without losing the right to be called civilized... By acquiescing in an act that can cause such suffering to a living creature, who among us is not diminished as a human being?"[49] And there is some mention of aesthetics; many of us, she says, "prefer the sight of the vetch and the clover and the wood lily in all their delicate and transient beauty to that of roadsides scorched as by fire."[50]

Without question, though, Silent Spring provoked the reaction it did because such "impractical" reasons were kept secondary to its main thrust, the effects of chemicals on

human health and welfare. Yet though she stayed scrupulously close to facts at all times, Carson managed to make them live and breathe through her emotional involvement, which throbs on every page. Rachel Carson's awareness that she was dying of cancer when she wrote may have turned the book from a scientific treatise to the public catalyst it became.

David Ehrenfeld (1938-)

A biology professor with degrees in zoology, history and medicine, David Ehrenfeld published in 1971 a textbook on Biological Conservation that discussed how current actions of humankind are causing a progressive deterioration in the numbers, diversity, and health of living species, communities, and ecosystems. The viewpoint was factual and relatively unopinionated, going no farther than utility arguments that preservation of natural biota has both short and long-range benefits for mankind.

But in 1978 a provocative book called The Arrogance of Humanism appeared in which Ehrenfeld turned the ecological and cultural arguments on their heads in a chapter entitled, "The Conservation Dilemma." After a thorough inspection of the reasons to preserve species that are based on extended self-interest, Ehrenfeld concludes that such "humanistic" or homocentric arguments ultimately fall short of the mark in many cases, and that we should stop being afraid to save the Houston toad because it exists and it is the right thing to do. Instead, he says, we tend to fabricate questionable

arguments that the stability of the world ecosystem will be decreased by the toad's extinction, or that millions of people today and in the future will mourn its passing because it was beautiful and interesting.

Ehrenfeld's pivotal word is "humanism," which he defines as the current active religion of the Western world, and rapidly the Eastern as well. Its central tenets are that the human species is in control of its own destiny and the world, and that human ingenuity, reason and pluck will lead to the eventual capacity to solve all of our problems of physical and environmental limitations and assume our rightful place as the humane masters of ourselves, the world, and the universe. Ehrenfeld's book is an angry, brilliant debunking of what he perceives to be this dangerous myth.

Humanism creates the dilemma; because of the stress placed on rationality and the ridicule of emotion, environmentalists are faced with coming up with "a logical, practical reason for saving each and every part of the natural world that we wish to preserve."[51] When no practical reason is apparent, environmentalists create one, supplying contrived rationalizations of the aesthetic and ecological variety to support their gut-level feeling that it is simply necessary to protest turning a favorite marsh into a shopping center. While often viable, these rationalizations suffer from one major weakness, says Ehrenfeld--they are all still humanistic, putting the interest of people first and avoiding

the crux of the issue. Since the aesthetic and ecological worth of the marsh can at least theoretically be given a monetary value, this raises the problem of relative values, for if the only yardstick is the dollar, and the services of a marsh are assigned a dollar value of being worth so much per acre per year (as a study by Eugene Odum attempted to do), then arguments for the marsh on this basis carry little weight if a competing proposal offers far greater profits per acre than would be lost by the marsh's destruction.[52] In other cases, such as the furbish lousewort in the remote Maine woods, even imaginative thinkers would be hard pressed to say much would be lost in a monetary sense, even over an ecological time frame, if it were to disappear.

Realizing the essentially utilitarian nature of Aldo Leopold's land ethic, Ehrenfeld criticizes it as insufficient, complaining that Leopold leaves no justification for saving species of no great beauty or importance in maintaining an ecosystem. (Though perhaps a valid point, Ehrenfeld is taking a rather uncharitable view of Leopold's sweeping statements about maintaining integrity.) This stability in diversity "hypothesis turned out to be a rallying point for conservationists who wished to justify their original emotional desire to protect the full richness of Nature, including the apparently useless majority of species," he says.[53] But he warns that conservationists "must not assume that ecological theory can always be made to support their cases."[54] Though practical and aesthetic reasons can be

used to support conservation measures, they must always be presented along with the moral, nonhumanistic ones with the "understanding that the latter are more important in every case."[55]

This is an extraordinary statement. The importance of moral and religious respect for life has grown from some suggestions in Leopold and Carson, outright admittance by Elton, and now to the point where Ehrenfeld is giving it the highest priority of all. It springs from two sources, he says:

> the humility-inspiring discoveries of ecology and the sort of ecological world view, emphasizing the connectedness and immense complexity of the human relationship to Nature...and the growing bloc of essentially religious sentiment that approaches the same position--equality in that relationship--from a non-scientific direction.[56]

Paul and Anne Ehrlich (1932-), (1933-)

While David Ehrenfeld expressed with great force the importance of the purely moral reasons for acting in a certain way toward the earth, he has been accused with some justification of writing the book in such vituperation that the homocentric reasons for conservation were given shorter shrift than they deserve. In their latest book, Extinction (1981), Stanford biologists Paul and Anne Ehrlich incorporate Ehrenfeld's ideas but present a more balanced analysis of the merits of different arguments.

The Ehrlichs have long been regarded as leaders in the environmental community, publishing such influential and

catalytic books as The Population Bomb (1968), The End of Affluence (1974), and the massive Ecoscience: Populations, Resources, and Environment (1977) which serves as a comprehensive text on the subject. Their meticulously researched books are primarily concerned with how humans are going to cope with the limitations and potentials before us, and what the individual can do to influence his or her destiny. Overpopulation, pollution, species and community loss, consumption of resources, and inherent limits to economic growth provide "considerable reason for believing that extremely fundamental changes in our society are going to be required in order to preserve any semblance of the world we know. Furthermore, those changes are going to have to take place in a framework of natural limits."[57] Their policy recommendations are grounded in scientific fact and the ultimate practicality to man of realizing the nature of these limits as soon as possible.

But in Extinction they also match Ehrenfeld by stating there is an

> important argument in favor of preserving species that has nothing to do with balancing economic costs and benefits to humanity. It is essentially a matter of ethics. To our minds this is the first and foremost argument for the preservation of all nonhuman species. The argument is simply that our fellow passengers on Spaceship Earth, who are quite possibly our only living companions in the entire Universe, have a right to exist.[58]

Perhaps because it is now in our power to annihilate, human beings have to care.

The Ehrlichs, however, do not merely wring their hands

over the deplorable attitudes that most of humanity possesses and offer little recourse other than to wait until admittance of such feelings becomes widespread. They give in the meantime, while such ethics are developing, the practical and homocentric reasons for species preservation "in the belief that they are powerful enough to persuade even the most dedicated human chauvinist that protecting the Gorillas and Furbish Louseworts is in his or her own direct self-interest."[59] Rather than throw all our eggs in the moral basket--after all, what happens then if such ethics do not catch on?--they acknowledge the ultimate importance of the moral reasons for species preservation without denigrating the value of aesthetic and practical ones.

Summary

The three themes emerge strongly in all of these biologists. Human reliance on the functioning life-support systems of the world is stressed, for as Ehrenfeld puts it, "the life and the life-support systems are not separable, they are part of the same whole."[60] Humility in playing with the living apparatus of the earth is also emphasized, as biologists more than any other group realize that though we may have discovered what many of the things around us look like and even, sometimes, what they do as independent units, we have not even begun to decipher how all of the different parts function together to form the marvelous self-perpetuating

system we live within. They write because they are uncomfortably aware that such concepts have not seeped into the conventional wisdom of the world, posing disastrous consequences.

All of them, reacting to a changed world and the implications of their science, felt the need to stretch out beyond the confines of biology, to dabble in sociology, psychology, and philosophy and to wonder aloud how people behave and how they ought to behave. Ecology was a starting point, but by itself ecology was not enough. They expanded it into a way of looking at the world, a way to balance science and human concerns, a bridge that they believed necessary. Even Eugene Odum, with his firm belief in the theory of integrative levels, is teetering on the edge of a philosophy that declares that something about the organization of life is special. As time went on, these biologists became progressively bolder in reaching out to moral territory--ecology as a science was on firmer footing, and the need to do so was stronger as the drawbacks to utility as the only argument became apparent. With such metaphysical leaps only a stone's throw away from the core of ecology, it is no wonder that some biologists are a bit nervous about the word.

NOTES

[1]Susan L. Flader, Thinking Like a Mountain, (Columbia, Missouri: University of Missouri Press, 1974), p. 5.

[2]W.C. Alice, et al, Principles of Animal Ecology, (Philadelphia: W.B. Saunders, 1949), p. 1-72.

[3]Eugene Odum, Ecology, second edition, (New York: Holt, Rinehart and Winston, 1975), p. 1.

[4]Odum, p. 5.

[5]William Beck, "The Complementarity Argument," Philosophical Problems in Biology, ed. Vincent E. Smith, (New York: St. John's University Press, 1966), p. 39.

[6]Odum, p. 6.

[7]Odum, p. 142.

[8]Odum, p. 142.

[9]Odum, p. 95.

[10]Odum, p. 21.

[11]Aldo Leopold, A Sand County Almanac, with essays on conservation from Round River, (New York: Random House, 1966), p. xviii-xix.

[12]Flader, p. 17.

[13]Leopold, p. 28.

[14]Leopold, p. 291.

[15]Leopold, p. 189.

[16]Leopold, p. 162.

[17]Leopold, p. 197.

[18]Leopold, p. 117.

[19]Leopold, p. 239.

[20]Leopold, p. 239.

[21]Leopold, p. 241.

[22]Leopold, p. 246.

NOTES (continued)

[23]Leopold, p. 262.

[24]Leopold, p. 264.

[25]Leopold, p. 261.

[26]Leopold, p. 170.

[27]Leopold, p. 102.

[28]Leopold, p. 93.

[29]Leopold, p. 155.

[30]Leopold, p. 146.

[31]Leopold, p. xviii.

[32]Leopold, p. 292.

[33]Leopold, p. 35.

[34]Charles Elton, The Ecology of Invasions by Animals and Plants, (London: Methuen, 1958), p. 145.

[35]Elton, p. 143.

[36]Elton, p. 143.

[37]Elton, p. 144.

[38]Elton, p. 144.

[39]Elton, p. 144-5.

[40]Elton, p. 145.

[41]Elton, p. 18.

[42]Leopold, p. 262.

[43]Rachel Carson, The Edge of the Sea, (New York: Houghton Mifflin, 1955), p. 11,15.

[44]Rachel Carson, Silent Spring, (New York: Fawcett Crest, 1962), p. 169.

[45]Carson, Silent Spring, p. 44.

[46]Carson, Silent Spring, p. 261.

NOTES (continued)

[47]Carson, Silent Spring, p. 118.

[48]Carson, Silent Spring, p. 64.

[49]Carson, Silent Spring, p. 95.

[50]Carson, Silent Spring, p. 71.

[51]David Ehrenfeld, The Arrogance of Humanism, (New York: Oxford University Press, 1978), p. 177.

[52]Ehrenfeld, p. 201.

[53]Ehrenfeld, p. 194.

[54]Ehrenfeld, p. 199.

[55]Ehrenfeld, p. 210.

[56]Ehrenfeld, p. 207.

[57]Paul Ehrlich, The Population Bomb, (New York: Ballantine Books, 1968), p. 172.

[58]Paul Ehrlich and Anne Ehrlich, Extinction, (New York: Random House, 1981), p. 48.

[59]Ehrlich and Ehrlich, p. 52.

[60]Ehrenfeld, p. 122.

CHAPTER III

THE NEEDS OF A PEOPLE

EDWARD ABBEY

WALLACE STEGNER

LOREN EISELEY

RENÉ DUBOS

SIGURD OLSON

A few weeks ago I drove to the edge of Mono Lake and walked around it, alone, for about four days. Though my backpack was heavy with books, pens, and paper, and I had rationalized to myself and friends that this was actually a working vacation, I didn't go because of work. I went because I wanted to leave the fumes from El Camino, the train across the street, the vocal refrigerator in the kitchen, and everything about the city I live in behind for a few days. I chose Mono Lake, just east of Yosemite on the far side of the Sierra escarpment, because I did not want to merely escape from somewhere as much as arrive at a place and let its character sink into me slowly, a little each day. The most precious thing I found was the silence, that the gulls' cries or whistle of wind added to rather than diminished. Another exhilaration was that I was completely dependent on my own judgement and abilities, for if I misjudged the weather and did not set up a tent, I would get wet. There was no safe roof nearby to retreat to and no one within miles to call for help. Waking up to frost on sagebrush and the ruddy glow of dawn on the snow-buried Sierra, spending whole afternoons watching phalaropes and grebes feed unconcernedly near shore, and sleeping at night on volcanoes and within tufa towers, I gained a tranquility that I could not have gotten elsewhere or in any other way. And yes, I got a lot of work done as well.

Whereas fifty or a hundred years ago I would have been certified eccentric for this kind of behavior (and still

might be by some today), recognition that the beauty and wildness of natural landscapes offer something unique to the humans who wander in them has increased in roughly inverse proportion to the amount of wild land still left to get lost in. The spread of technological, mechanized society, the penetration of highways, towns, and other developments into previously remote corners, and the progressive detachment of our culture from contact with natural objects and scenes has given new impetus to the idea that landscape has a profound and beneficial influence on human character and society.

The aesthetic and cultural values of wild places have played a major role in moves to restrain the progress of modern civilization. Often development proposals offend aesthetic sensibilities and spark resistance when strong ecological or moral arguments would be difficult to make, as for example a proposal to place a copper mine in the midst of previously untouched wilderness. Not only would the pit be ugly in a direct way for those who came upon it, the fact that it was there at all, even if unseen, would alter the character of the wilderness or, more accurately, the feelings that the wilderness produces in human characters. Needless to say, this is the kind of idea that spawns endless arguments and disagreements.

Western attitudes toward landscape have varied widely through history. The Bible portrays actual wilderness as a physical and spiritual wasteland, a place of evil spirits

and tribulation, although it also served as a place to seek spiritual revelations. The ideal Biblical landscape is not wilderness but a fruitful and lush Edenic garden. In the Middle Ages travelers across Europe closed the curtains of their coaches in order to block out the dreadful, satanic shapes of the Alps. In America, the predominant attitude of the Puritans and the pioneers who followed them and pushed the frontier westward was that wilderness was a spiritual vacuum, and that God looked favorably on conquering and converting it into wholesome country as soon as possible. As wilderness became a less immediate and threatening presence in American culture, the pastoral ideal of valuing cultivated, ordered countryside as the place where human civilized values best flourish was developed.

But as untamed areas continued to disappear, many Romantic poets and painters of the nineteenth century reacted to what they considered the oppressive rule of reason and imposed order in landscapes. They idealized wild scenes as sublime, evoking associations between divine revelation and nature. Transcendentalists such as Ralph Waldo Emerson and Henry David Thoreau viewed meditations on natural objects as means to perceive the universal spiritual truths reflected in them. And John Muir's glorious adventures in the high Sierra celebrated the nearness to God and refreshment to the spirit gained by immersing oneself in magnificent alpine scenery. Modern proponents of the cultural value of wild things owe a heavy intellectual debt

to these authors.[1]

Appreciation of the qualities of natural landscapes falls into two broad categories: the immediately aesthetic and the deeper ability of natural scenes to provide a needed release from civilization. The first simply recognizes that surroundings with greenery, birdsong, wildlife, and fresh air are pleasant, and that people have a psychological hunger for recreational opportunities in beautiful places. Whether man or God created the scenery is unimportant in this analysis; the quality is in the surface of the landscape, its immediate sensual aspects of form, color, light, movement, sounds, texture. It is thus possible with these criteria to value the Grand Canyon and Yosemite Valley as natural artistic masterpieces. Landscape architects are realizing this more and more, and the popularity of Ian McHarg's "design with nature" school shows a growing distaste for the ugliness of modern noise, visual clutter, and urban greyness. Even Ladybird Johnson's beautification efforts and the campaign against roadside litter reflect this urge to surround ourselves with the green, the live, and the beautiful.

The second kind of cultural appreciation is more complex, penetrating the surface appearance of landscape to value the quality of wildness itself in natural areas that cultivated scenes lack. This second view fueled the twentieth-century wilderness movement, and was championed by men who knew the wilderness well and viewed with alarm the

growing spread of highways, easy access by airplanes, mining and residential development, and other pressures encroaching on areas they had never imagined would be anything but untouched. These wilderness crusaders believed that the qualities of ruggedness, openness, and freedom in wilderness were built into the character of people exposed to it, and that opportunities for solitude, adventure, and exploration contributed to the well-being of all people. Wild areas were the context out of which American culture had grown; if all wilderness were in danger of being eliminated, then cultural values such as self-reliance, freedom, and independence from governmental authority were in danger as well. Viewing with suspicion our sudden power to raze forests, dam rivers, and make empty deserts bloom, they protested that simply because we were now capable of fulfilling the old Puritanical vision didn't mean that we were obliged to do so.

Writers in this section are conscious of the heritage of landscape, a sense of time and history, and the realization that we have only just recently emerged from a time when everyday exposure to nature was taken for granted. Fearful of the damage which losing all contact with living things and natural scenery would bring, they believed that such rejuvenating experiences were open to anyone who took the trouble to go looking for them. In writing about them they often professed to feel a spiritual energy in the natural landscape. And realizing the value of combating science with science, they embraced ecology as a rational,

communicable support for their feelings.

Edward Abbey (1927-)

It would be hard to find someone as enthusiastic about the value of wilderness as an alternative to cities, factories, authoritarian power, and governmental interference with individual freedom than Edward Abbey. In Desert Solitaire (1968), a collection of essays describing his experiences as a park ranger in Arches National Monument, Utah, and in his cheerfully iconoclastic novel about blowing up the Glen Canyon dam, The Monkey Wrench Gang (1975), grins Abbey the anti-Establishment rebel, the revolutionary who loves "nights of desperate laughter with brave young comrades, burning billboards, and defacing public institutions."[2] Commenting savagely that the tourists he sees are so isolated from their surroundings that they are blind to even the awareness that something has been lost in the motorized, paved, comfort-stationed national parks, Abbey sincerely hopes that the "fires of revolt may be kindled" by pruning people out of their cars, revolt against "our real enemies back home in the capitol."[3] A violence, an urge to throw a rock at something big, glassy, and housing power, is a constant undercurrent in his books, and he argues for preserving wilderness as a last political asylum, a refuge for people fleeing a tyrannical government in the not-so-distant future.

But Abbey would be far less rich and fascinating if he

only spat out clever invectives of what he hates about technological progress. Most of Desert Solitaire is devoted to exploring the places, creatures, and character of the desert that he loves. He first comes to Arches in quest of a "hard and brutal mysticism in which the naked self merges with a nonhuman world and yet somehow survives still intact, individual, separate."[4] He feels around him "a far larger world, one which extends into a past and into a future without any limits known to the human kind,"[5] and has a transcendentalist's desire to penetrate beyond the surface appearances that surround him to find a unity or essence. The first step, he realizes, is stripping away all human-imposed personifications placed on wild things that obscure their own reality, such as thinking of nighthawks as lovers, or a rock shape as an ogre.

> The personification of the natural is exactly the tendency I wish suppress in myself, to eliminate for good. I am here not only to evade for awhile the clamor and filth and confusion of the cultural apparatus but also to confront, immediately and directly it it's possible, the bare bones of existence, the elemental and fundamental, the bedrock which sustains us. I want to be able to look at and into a juniper tree, a piece of quartz, a vulture, a spider, and see it as it is in itself, devoid of all humanly ascribed qualities, anti-Kantian, even the categories of scientific description.[6]

But his quest turns paradoxical. Although he feels that the world around him is alive and full of meaning, it isn't talking. Abbey perceives a dichotomy between the surface of things--their touch, smell, look, and apparent physical existence--and the essence, the spiritual inner quality

suggesting a divine underlying unity or meaning. A lone juniper near his trailer is, he feels, his key to discovering this meaning, and he has stared at it countless hours

> hoping to learn something from it, to discover the significance in its form, to make a connection through its life to whatever falls beyond. Have failed. The essence of the juniper continues to elude me unless, as I presently suspect, its surface is also its essence. Two living things on the same earth, respiring in a common medium, we contact each other but without direct communication. Intuition, sympathy, empathy, all fail to guide me into the heart of this being--if it has a heart.[7]

At last he concludes that there is no such thing as the essence, and gives up this transcendental search. The desert has "no meaning but its own existence."[8] But the old longings die hard: in the cathedrals of Glen Canyon he finds himself in an unguarded moment looking for "pure being, pure spirit, pure disembodied intelligence, about to speak my name."[9] And when he finds no such thing, he gives himself a mental slap on the wrist for the twinge of disappointment he feels. He wants instead to "learn to perceive in water, leaves, and silence more than sufficient of the absolute and marvelous, more than enough to console him for the loss of ancient dreams."[10]

Though he tries not to impose any human qualities on them, Abbey grants the possibility of consciousness to animals, as demonstrated by his encounter with two courting gopher snakes. At first he again berates himself for descending into anthropomorphic descriptions of them, but then brings up doubts that such descriptions are entirely false. He is

attributing motives and emotions to them, but not necessarily insulting them by giving them human motives and emotions. "I suggest that it's a foolish, simple-minded rationalism that denies any form of emotion to all animals but man and his dog....It seems to me possible, even probable, that many of the nonhuman undomesticated animals experience emotions unknown to us."[11] He wonders if he had not backed away in fear when the two snakes, yellow eyes blazing, had come straight toward him, he "might have learned something new or some truth so very old that we have all forgotten it."[12] Acknowledgement that other living things possess a conscious existence of their own, remote and mysterious though it may be, creates an obligation "to spread the news, painful and bitter though it may be for some to hear, that all living things on earth are kindred."[13]

Although he recognizes that his detection of emotions in snakes, frogs, and coyotes may be his own mind reflecting off the surface of material objects, he does not think this is a full explanation. There is, however, a fallacy in "confusing the thing observed with the mind of the observer, of constructing not a picture of external reality but simply a mirror of the thinker. Can this danger be avoided without falling into an opposite but related error, that of separating too deeply the observer and the thing observed, subject and object, and again falsifying our view of the world?"[14] At times he is frustrated by how alienated from the desert he feels, how detached and impassive he can be despite his

insights.

An enigmatic passage which attempts to solve this problem of distance describes him hurling a rock at a rabbit and killing it for no reason whatsoever, other than a weak but significant rationalization that he was performing a scientific experiment in what his reactions would be, which created the necessary detachment. At first he is horrified by his deed, but a curious elation follows. He has acted within the desert world rather than passively passing through it, so that he no longer feels isolated from but a part of the death and change around him. He exults, "what the rabbit has lost in energy and spirit seems added, by processes too subtle to fathom, to my own soul."[15] He has, so to speak, become part of the desert ecology. And this makes him shout in joy, "we are kindred all...long live diversity, long live the earth!"[16]

Death as a natural part of ecology obsesses Abbey, and he goes to great pains to paint in lurid detail the disease, death, and rotting flesh everpresent in the desert. This is no arranged diorama in a natural history museum. This is life, vital, paradoxical, moving and changing through time. No myopic blindness to the "dark side" of nature, no romantic delusion covering up its cruelty and horror, would be sufficient to knowing and understanding it. The vulture is Abbey's vehicle for expression of this dark side, and it appears constantly through the book, always hovering nearby, its shadow gliding over hot desert soil. He wants to remind

us that we can never fool ourselves into thinking we can escape the eventual fate of the vulture.

Abbey thus blends elements of all three perspectives--the cultural value of wilderness, the spirituality of non-human creation, and even a somewhat mystical grasp of ecology. In describing food chains, he suggests there is a continuous flow of an energy other kilocalories. Upon death, the joy and energy of frogs become the contentment of their predators. When the rabbit dies in the talons of the horned owl, there is a bond, a love created for an instant between them. He asks, "how can we speak of natural enemies in such a well-organized system of operations and procedures?"[17]

Wallace Stegner (1909-)

Though Wallace Stegner's amiable, graceful writings are completely unlike Edward Abbey's outraged exuberance, both are deeply tied to the deserts, sun, space, aridity and openness of the American West. Stegner is a novelist, biographer and cultural historian of the West who returns repeatedly to the idea that geography has a profound effect on the character of the people who inhabit it. To Stegner, Americans require their wilderness to keep the peculiarly American qualities they cherish.

Wallace Stegner grew up all over the West, beginning on the Sasketchewan prairie as the son of unsuccessful homesteaders. A collection of essays, The Sound of Mountain

Water (1969), is full of his own reactions and feelings for the wilderness, such as the recollection of standing by a river as a child and being so enthralled that he "gave his heart to the mountains."[18] But he makes it clear that he believes everyone, not just a few addicted souls, is susceptible to the charms of the West, its opportunities, optimism, and freedom. Stegner is nostalgic for a time when these qualities were rich and strong, and in his distaste for the technological era which has replaced it, wants to preserve enough open land to maintain at least a part of this spirit, as this excerpt from his famous essay, "The Wilderness Letter" (1960) shows:

> Something will have gone out of us as a people if we ever let the remaining wilderness be destroyed; if we permit the last virgin forests to be turned into comic books and plastic cigarette cases; if we drive the few remaining members of the wild species into zoos or to extinction; if we pollute the last clear air and dirty the last clean streams and push our paved roads through the last of the silence, so that never again will Americans be free in their own country from the noise, the exhausts, the stinks of human and automotive waste. And so that never again can we have the chance to see ourselves single, separate, vertical and individual in the world, part of the environment of trees and rocks and soil, brother to the other animals, part of the natural world and competent to belong to it. Without any remaining wilderness we are committed wholly, without chance for even momentary reflection and rest, to a headlong drive into our technological termite-life, the Brave New World of a completely man-controlled environment. We need wilderness preserved--as much of it as is still left, and as many kinds--because it was the challenge against which our character as a people was formed. The reminder and the reassurance that it is still there is good for our spiritual health even if we never once in ten years set foot in it. It is good for us when we are young, because of

> the incomparable sanity it can bring briefly, as vacation and rest, into our insane lives. It is important to us when we are old simply because it is there--important, that is, simply as idea.[19]

For these reasons, wilderness is vital as "a means of reassuring ourselves of our sanity as creatures, a part of the geography of hope."[20]

American Places (1981), written more than twenty years after the "Wilderness Letter," shows Stegner's broader and more fleshed out conservation philosophy. He is wittier, more scathing, and less hopeful than before. The same ideas occur but are tinged with a far greater sense of imminent trouble--the loss of wilderness, and the cultural values that go with it, is proceeding along just as he was afraid it would. A young American now confronts "not potential, but developed power attended by destruction and depletion. Though we should have recognized the land as a living organism demanding care and stewardship, we have treated it like a warehouse, and now it is a warehouse half-emptied."[21]

Stegner has also added the perspective of ecology to his arguments, remarking that

> the subtler relationships, the web of small tensions and accomodations and stand-offs that make for ecological health, we have hardly begun to appreciate....Ecology, a science hardly two generations old, has begun to teach us something about cause and consequence: that is the earth speaking, trying to state its case for survival. But experience might have taught us much sooner.[22]

In an interview during November, 1981, Stegner said that American Places was intended to be "a celebration of the good natural life, the good earth, and a lament for what

we've done to that."[23] It was not meant to sound hopeless, he said, but only critical of an "industrial nation uncontrolled by humane values."[24] Significantly, Stegner pointed out that the last twenty years has seen the creation of the "philosophical backing of understanding how the web fits together" that has strengthened a movement which began simply as a bunch of mountain climbers who knew they liked wilderness and tried to tell others their feelings.[25] The crucial value of ecology is that its concepts, since they are rational and scientific, can be communicated broadly and understood by those who have never experienced the love for wild things. Certain feelings may be both the motivating force and the final goal of the environment movement, but ecology serves as the key to common understanding, a universal language those mountain climbers could express themselves in.

Loren Eiseley (1907-1977)

Another son of unsuccessful prairie homesteaders, Loren Eiseley was also concerned with the cultural past, but over a broader scope than the history of the American West. An anthropologist and archeologist whose research dealt with human evolution and the development of the brain, Eiseley is a cultural historian back to our very evolutionary origins, the beginnings of life, and forward into the future as he speculates what we may evolve into along our "immense journey," the title of his most popular collection of

essays (1957).

Time is a palpable presence in all of Eiseley's writings. Time both limits humankind and defines our unique position in the natural order, for human beings can remember and think into the future, and thus escape to some extent from the "limited pinpoint" of the present moment. The dimension of time is still one that is largely denied us, says Eiseley, but in his essay "The Flow of the River" he describes how floating down the Platte River allowed him to escape for an afternoon from the confines of the present; he "merges with the sunlight and air and running water so that whole eons, the eons that mountains and deserts know, might pass in a single afternoon without discomfort."[26] Eiseley's preoccupation with time makes him regard other creatures as fellow companions on the evolutionary journey. He admits once to letting go a mouse he had caught in a wastebasket because of the sudden kinship he saw in the mouse's mammalian features to our own. Plants and animals in their present forms are images caught by a fast shutter speed of the ever moving stream of life; they have long histories and richly potential futures. A catfish he rescues from a frozen river is a friend he can speak to across the reaches of evolutionary time--"we are both projections out of that timeless ferment and locked as well in a greater unity that lay incalculably beyond us."[27]

For all his understanding of science and evolution, Eiseley retains a distinctly unscientific suspicion that

science alone can not explain life, or that "mysterious principle known as organization."[28] Snowflakes, sparrows, empty seed cases of cockleburs are all "apparitions from the mysterious shadow world beyond nature, which contains--if anything contains--the explanation of men and catfish and green leaves."[29] Eiseley is searching for glimpses of this shadow world, but doesn't believe that reductionist science will be the avenue to find it:

> I have come to suspect that this long descent down the ladder of life, beautiful and instructive though it may be, will not lead us to the final secret. In fact, I have ceased to believe in the final brew and the ultimate chemical....somewhere among these seeds and beetle shells and abandoned grasshopper legs I find something that is not accounted for very clearly in the dissections to the utlimate virus or crystal or protein particle. Even if the secret is contained in these things, in other words, I do not think it will yield to the kind of analysis our science is capable of making.[30]

To Eiseley, questions of what is life and how should we behave toward it are clearly not answerable within science alone, and he is a little afraid of the cockiness of scientists who proclaim confidently that they will soon be creating life. Too much science, Eiseley feels, and it becomes our master rather than our tool, as he says in his book The Invisible Pyramid (1970):

> With understanding arise the instruments of power, which always spread faster than the inventions of calm understanding. The tools of violence appeal to the fanatic, the illiterate, the blindly venomous. The inventions of power have grown monstrous in our time.[31]

Science and technology have created a terror, a detachment from the world that must be balanced by a return to the

"first world of understanding" of nature in order to protect us from our own soullessness.[32] The only alternative, now that we have learned to create weapons capable of destroying the earth, is to learn how to put them down. The need is not for more science, but for "a gentler, more tolerant people than those who won for us against the ice, the tiger, and the bear."[33]

After a lifetime of scientific pursuits, Eiseley resorts to the humility of wandering in wild places seeking visions, being open to the miracle of life around him rather than taking the battering ram of scientific method to it. And he is granted these insights enough times to reward all of his efforts, taking courage from an orb-weaving spider in a street lamp who embodies heroism in "a world where even a spider refuses to lie down and die if a rope can still be spun to a star."[34]

René Dubos (1901-1981)

Microbiologist and pathologist René Dubos is another scientist known for his sorties into sociology, philosophy, and religion in books such as Reason Awake! Science for Man (1970), A God Within (1972), and The Wooing of the Earth (1980). But Dubos takes a somewhat different position on the significance of landscape than the other writers in this section, in that he favors the pastoral ideal and direct aesthetic qualities more than he does the quality of wilderness. Significantly, Dubos grew up in a cultivated rural

province of France rather than the open praire, and so was not personally exposed to wilderness at an early age. One feels, throughout his writings, that his experience with nature consists of drinking tea in the back garden with a few birds singing the day's end from well-trimmed hedges. For all that, however, he is deeply concerned with the spirit of humans and the spirit of the earth, and critical of the modern severance of the two.

Dubos' main thesis is that a symbiotic relationship must be cultivated between humans and the earth, which will not only benefit humans, but will also be the best for the earth. Without man's transforming presence, landscape is incomplete, full of what Dubos repeatedly refers to as "unexpressed potentialities." This idea came to him as he looked over the completely artificial Italian landscape and realized that it was beautiful nonetheless, that not all treatment of the earth by humans has been brutal and insensitive. Though abhorring the notion of conquest or domination over nature, Dubos stresses that humans must actively manipulate the earth in order to "bring to light values that transcend those created by natural forces working alone."[35] He refers to this process as the humanization or "wooing of the Earth," a phrase borrowed from Tagore, a Bengali poet.[36] Humanization is natural and necessary because "no landscape, no matter how grandiose and fertile, can express its full potential richness until it has been given its myth by the love, works, and acts of man."[37]

So far as wilderness is concerned, he admires its scenery from afar, and admits we can not improve much on the Sierra or Himalayas, but his value for wilderness is based on its magnificent aesthetic appearance rather than what can be learned by experiencing it from within. No one really likes living in wilderness, says Dubos--we are biologically unfit for doing so in any greater concentration than nomadic bands, and we have a long tradition of manipulating the earth for our own purposes. But he does admit that wilderness is a bulwark against dehumanization, a place which fosters a sense of contact with our origins that can not be matched in a park or garden, which "helps us to be aware of the cosmos from which we emerged."[38] Dubos seems partial to the old concept of sublimity--grand mountain scenes are worthwhile for the thrills they give us, but we only need a few, and less aesthetically pleasing wildernesses such as marshes and desert scrubland can be done without.

Dubos' attitude toward ecology is also mixed, as aesthetic values again take precedence over "orthodox ecological criteria" as guides for action.[39] "Some of the landscapes we most admire are products of environmental degradation," he says happily, pointing to the deforestation of ancient Greece creating a landscape of light and form as an example.[40] Referring to his homeland in France repeatedly, he says that "according to my taste and that of many other people, the region is now more visually diversified and emotionally richer than it was in its original forested

state."[41] However, Dubos does admit that "humanization of the planet can be lastingly successful only if fundamental ecological laws are respected."[42]

Dubos justifies his anthropocentricism with the claim that he is not all that much impressed by nature, bringing up a few examples of nature's "clumsy solutions to ecological problems."[43] His examples, however, hold little water--the best he can come up with is that crashes in lemming populations seem to be a rather inelegant way of dealing with a problem, and that humans are currently mending a natural mistake by returning the carbon locked in fossil fuels back into the atmosphere. He feels that we can do better than nature, and that humans have already increased the beauty and diversity of the earth by their modifications. Using western Europe and Japan to justify this claim, he quotes Leopold's praise of these areas as ones where ecological balance seems to have been achieved, but fails to mention the next paragraph, in which Leopold said these appear to be inexplicable exceptions to the general appearance of a disease over the earth because of human treatment.

Dubos is not saying that our current attitudes will accomplish proper humanization, or that there is no need for change. His version of humility toward the earth is the notion of noblesse oblige, an old aristocratic ideal where man is put in the elevated status of a feudal lord, aware that others will serve, but feeling a reciprocal

responsibility to take care of the serfs and treat them kindly.[44] Of course, this is a somewhat less humble concept than others because humans are still the center of attention.

His vision for what that relationship should spring from blends both ecology and religion. Human relationships to the earth have a sacred quality, and thus behavior must be governed by a creative "religion of nature" that will arise from scientific knowledge.[45] The study of complex relationships has brought us to the point where we "may be able to recapture an experience of harmony, an intimation of the divine...a truly ecological view of the world has religious overtones."[46] Ecology, as a science alone, is not enough:

> Scientifically defined, ecology is nothing more than the study of interrelationships between living things and their environment; it is therefore ethically neutral. These relationships, however, are always influenced by the human presence, which introduces an ethical component into all environmental problems. Since the nature of our activities determines the extent and direction of environmental changes, ecological thinking must be supplanted by humanistic value judgements concerning the effect of our choices and actions on the quality of the relationship between humankind and Earth, in the future as well as in the present. Noblesse oblige.[47]

The specter of dehumanization created by a separation from the land has produced a slightly different reaction in René Dubos, but he ends up as well with a call for mixing aesthetic, religious, and ecological values into a single "theology of the earth."[48]

Sigurd Olson (1899-1981)

Canoe-country guide, wilderness defender, and essayist Sigurd Olson's home was the Quetico-Superior wilderness of Minnesota and Canada. From an early age until his recent death while on a trip there, Olson loved this country passionately and wrote about it in several collections of essays, including the Singing Wilderness (1956), and Open Horizons (1969). But Olson also realized that simply loving the land was not enough--not only must one be prepared to fight for it, one must also learn its ecology in order to truly understand it.

The wilderness sings to Olson, surrounds him with melody and harmony that he never tires of and returns again and again to hear. He is not alone, he believes, in his craving to listen to the music of wilderness, for "it seems to be part of the hunger that all of us have for a time when we were closer to lakes and rivers, to mountains and meadows and forests, than we are today."[49] Modern progress has contributed to this hunger, created a longing for "the deep wells of racial experience where life was simple and satisfactions were real."[50] The pull of wilderness comes from

> a longing for closeness to a primitive environment, the hunger to return for a little while to the wilderness. Centuries of caves, of shelters under trees, of dry spots beneath ledges and windfalls, of listening to the sounds of the night have left their mark.[51]

Part of the value of wilderness lies in that we must work to get there, testing our strength and self-reliance in order

to reap its benefits. In one passage Olson describes flying in to a favorite remote lake and arriving in an hour to a place that used to take several days of hard paddling to get to. The lake, though still beautiful and restful, had lost much of its magic--it had become too easy. "For the first time in my life I had failed to work for the joy of knowing the wilderness; had not given it a chance to become part of me....It seemed I had not earned the right to enjoy it."[52]

The creatures who inhabit the north woods add to the presence, the joy, and the music of the wilderness, and Olson feels a deep kinship for them. The scientific facts about them are less important than "how they make me feel and how they contribute to the character and quality of wilderness."[53] However, Olson specifically credits ecological understanding with increasing his appreciation and love for many creatures. Although he used to view timber wolves with fear and revulsion, after he learned that they were "the peak of a structure built of infinite relationships," he began to admire and respect them.[54] Ecology opened a whole new world to Olson, giving scientific reinforcement to beliefs he had had for years. In a beautiful passage in Open Horizons, Olson describes the first time ecology dawned on him and what richness it added to his perception of his beloved wild country. It occurred on a trip with a scientific expedition in the Quetico-Superior.

> It was then I first caught the meaning of ecology as a concept, and as I look back, one thing stands out, its impact as a basic understanding. More than

> knowledge, it was deeply involved with my own attitude and emotional reaction to the wilderness. A visceral sort of thing beyond mind and factual information, it was an inherent feeling that went down into that vast primordial well of consciousness, the source of man's original sense of oneness with all creation, a perspective reinforced with logic and reason, cause and effect, and scientific method....My delight in the natural world of nature could never be the same again--not that knowledge had changed the capacity for enjoyment, but that instead it had accentuated appreciation by making me aware of facets of interest that until then I had barely glimpsed.... It seemed to me after I had absorbed this concept my roots went down more deeply, like those of a black spruce penetrating the tangled mat over a glacial bog.[55]

His gut-level philosophy that "the matrix of the master plan is as infinite as the universe itself, and its minutest dependencies are as profound as its greater parts" had been scientifically vindicated.[56] To Olson, a lifetime of intuitions and ecology came together and became one glorious idea.

This solid philosophical underpinning sustained Olson when he began to fight for the preservation of the things he knew and loved so well. Olson believed that for anyone to become a crusader for conservation, both a personal love and intimacy with land and an understanding of its ecology were crucial. His alternative to a disturbingly mechanized and remote society was to develop an ecology of man that would preserve what he called the imponderables, the societal dividends that can not be calculated but must never be left by the wayside as progress continues. The need is one for balance, for if we can "live in our modern world with the

ancient dreams that have always stirred us, then our work will have been done."[57]

Summary

Like the ecologists, these writers are urging interdependence and humility in response to a changing world, in this case one that was gnawing away at blank spots on the map at a terrific rate. They share the feeling that the tie between land and human culture is a blood one, and that what happens to land reflects our own fate. Reacting to the pressure of ever more cities and tamed areas, they spoke for the importance of places where humans are outsiders, in the wings rather than center stage, and forced to acknowledge and be humble before the forces around them but not abjectly servile. Ecology and science had a tremendous appeal to these writers, augmenting their personal intimations. Like the fable of the slender twigs that, as a bundle, can not be broken by the strongest man, these perspectives were together far stronger than any one could have been alone.

NOTES

[1]For a discussion of historical attitudes toward wilderness, see Roderick Nash, Wilderness and the American Mind, (New Haven: Yale University Press, 1973).

[2]Edward Abbey, Desert Solitaire, (New York: Ballantine Books, Random House, 1968), p. 48.

[3]Abbey, p. 62, 177.

[4]Abbey, p. 6.

[5]Abbey, p. 111.

[6]Abbey, p. 6.

[7]Abbey, p. 30-31.

[8]Abbey, p. 155.

[9]Abbey, p. 200.

[10]Abbey, p. 200.

[11]Abbey, p. 24.

[12]Abbey, p. 24.

[13]Abbey, p. 24.

[14]Abbey, p. 270.

[15]Abbey, p. 38.

[16]Abbey, p. 38.

[17]Abbey, p. 113.

[18]Wallace Stegner, The Sound of Mountain Water, (Garden Dity, New York: Doubleday, 1969), p. 42.

[19]Stegner, p. 146-7.

[20]Stegner, p. 153.

[21]Wallace Stegner and Page Stegner, American Places, (New York: E.P. Dutton, 1981), p. 37.

[22]Stegner, American Places, p. 191.

NOTES (continued)

[23]Wallace Stegner, interview in his home in Los Altos Hills, November 6, 1981.

[24]Stegner, interview.

[25]Stegner, interview.

[26]Loren Eiseley, The Immense Journey, (New York: Random House, 1957), p. 16.

[27]Eiseley, p. 24.

[28]Eiseley, p. 26.

[29]Eiseley, p. 27.

[30]Eiseley, p. 202.

[31]Loren Eiseley, The Invisible Pyramid, (New York: Charles Scribner's Sons, 1970), p. 92.

[32]Eiseley, The Invisible Pyramid, p. 154.

[33]Eiseley, The Immense Journey, p. 140.

[34]Eiseley, The Immense Journey, p. 177.

[35]René Dubos, The Wooing of the Earth, (New York: Charles Scribner's Sons, 1980), p. xv.

[36]Dubos, p. xv.

[37]René Dubos, A God Within, (New York: Charles Scribner's Sons, 1972), p. 152.

[38]Dubos, The Wooing of the Earth, p. 18.

[39]Dubos, The Wooing of the Earth, p. 1.

[40]Dubos, The Wooing of the Earth, p. 1.

[41]Dubos, The Wooing of the Earth, p. 50.

[42]Dubos, The Wooing of the Earth, p. 68.

[43]Dubos, The Wooing of the Earth, p. 81.

[44]Dubos, The Wooing of the Earth, p. 151.

[45]Dubos, A God Within, p. 41.

NOTES (continued)

[46]Dubos, A God Within, p. 43.

[47]Dubos, The Wooing of the Earth, p. 157.

[48]Dubos, A God Within, p. 44.

[49]Sigurd F. Olson, The Singing Wilderness, (New York: Alfred A. Knopf, 1956), p. 6.

[50]Olson, p. 7.

[51]Olson, p. 206.

[52]Olson, p. 115-6.

[53]Olson, p. 223.

[54]Sigurd F. Olson, Open Horizons, (New York: Alfred A. Knopf, 1969), p. 153.

[55]Olson, Open Horizons, p. 164-71.

[56]Olson, The Singing Wilderness, p. 162.

[57]Olson, Open Horizons, p. 227.

CHAPTER IV

A SECULAR PILGRIMAGE

THE NATURE POETS:

ROBERT BLY

KENNETH REXROTH

A.R. AMMONS

GARY SNYDER

DENISE LEVERTOV

ANNIE DILLARD

JOSEPH WOOD KRUTCH

WENDELL BERRY

It was afternoon in an alpine meadow of a western mountain range, and the brilliant sunshine combined with the miles I'd walked that day at high altitude made me drowsy as I rested on a boulder. I leaned over for a minute on the warm, rough granite and closed my eyes. When I opened them I was staring directly into the eyes of a weasel not five feet away. His unexpected presence transfixed me. I felt a sudden communication in that stare, a prickling awareness of a personality within that trim, sleek body. Caught, we waited to see who would move first--and then, though I did not blink, he vanished. I have never been able to look at boulder-studded high meadows in the same way again. An elfish face with two bright dark eyes may be watching me from behind every rock or clump of grass.

The belief that animals, trees, rivers, mountains, and other features of the natural world possess a spirit is a truly ancient one. It, rather than any scientific appreciation, or any fear of a shortage of wild experiences, formed the basis for respect and reverence for nature in many different cultures. Animistic beliefs figure prominently in most primitive religions as well as several contemporary ones. The great Eastern religions, particularly Shinto, Taoism, and Zen Buddhism, are known for their nature worship and beliefs that all things belong to a universal spiritual oneness, although several critical observers have noted that their respect for life is often more apparent in theology than fact. In Western tradition, St. Francis of Assisi

preached that wild animals had souls and treated them as equals, but his ideas were disavowed by the Church. The notion had somewhat more luck in secular circles, as many romantic poets postulated that trees, animals, and other natural objects were not the spiritually dead machines that the dominant line of thought, from Aristotle to Thomas Aquinas, Descartes, Hegel, and Locke, assumed they were.

Indeed, although religion has been an important source for humility in treating the earth in some cultures, the attitudes fostered by some major religions have been blamed for precipitating the abuse of other creatures and the environment. Historian Lynn White has singled out the Judeo-Christian attitude found in Genesis, "be fruitful and multiply, and fill the earth and subdue it, and have dominion over...every living thing" for much of the cause of our environmental crisis.[1] Though some observers, such as Lewis Moncrief, John Passmore, and René Dubos disagree that Christianity "bears a huge burden of guilt," saying that the history of abuse is far older and rooted in nearly every culture, there seems little doubt that religion has been at least partially responsible for propogating arrogant attitudes toward the material world, which in Christianity is always rigidly separated from the spiritual world of man.[2] This has led many, such as White, to believe that if religion has been the cause, it must also be the cure, and that any meaningful change in how we treat the earth will be religious in nature.

As we have seen so far, many authors find that when they pursue these questions far enough they must deal with deep attitudinal, moral, and religious ideas directly sooner or later. Several writers have been exploring and expressing the kinds of feelings that could lead a biologist like David Ehrenfeld to say, "Longstanding existence in Nature is deemed to carry with it the unimpeachable right to continued existence," and trying to explain in less prosaic terms what that companionship means now and could mean in the future.[3] Distressed by the attitude of irreverence around them, these "modern nature poets" and other writers are reacting to the rift between technological humankind and nature. They are attempting to reestablish the ancient linkages through direct and open apprehension--the natural world is not just a source of convenient imagery, as it had been to some so-called nature poets of the past, but itself of interest. Once more, the themes of humility before the mystery of life, connections between all living things, and an urgent lament for what progress has overlooked appear in their works. Wendell Berry, himself one of these poets, describes what he calls this "secular pilgrimage" in poetry:

> The nature poets of our own time characteristically approach their subject with an openness of spirit and imagination, allowing the meaning and the movement of the poem to suggest themselves out of the facts. Their art has an implicit and essential humility, a reluctance to impose on things as they are, a willingness to relate to the world as student and servant, a wish to be included in the natural order rather than to "conquer nature," a wish to discover the natural form rather than to create new forms that would be exclusively human.

> To create is to involve oneself as fully, as consciously and imaginatively, as possible in the creation, to be immersed in the world....This poetry arises out of a state of mind that could very accurately be described as religious.[4]

This quest is usually on the level of individual creatures and objects rather than entire landscapes, and on the particular individual relationship rather than that of society at large. These writers do not seem to require vast wildernesses for their insights; they learn much by looking at backyard bird feeders and the woodlot behind the house. But once again, a monocular vision is not considered enough, and worries over the loss of cultural heritage, as well as the unavoidable facts of ecology, crop up as well.

The Nature Poets

Several years ago the Sierra Club asked the noted poet Robert Bly to put together a collection of poems on ecology. The resulting anthology, News of the Universe (1980), draws from a rich literary tradition created by a desire to break out of preoccupation with human affairs. For contrast, the first poems are from the time of the Enlightenment, which Bly sees as the point in history when disregard for nature reached its heights. The age of supreme faith and trust in human reason brought an attitude that nature was essentially rather worthless, a vapid and often disagreeable background for human activity, which was the only thing of real worth. Since animals and other aspects of the natural world did not

appear to be big on reason, and since possession of reason set the standard for value, most thought the environment not worth bothering over. Thus a mental gap between humans and everything else (the "environs" or surroundings) was strengthened and made rigid. Bly refers to this as the "Old Position," recognizing its roots in Aristotlean and Stoic thought, and blames on it our current beliefs that dams and shopping centers are symbols of progress. Once nature is stripped of "being," in some senses (Descartes' famous pronouncement "I think, therefore I am," implying that everything that couldn't think somehow was not), it can be freely regarded as an exploitable commodity void of intelligence or sentience.[5]

According to Bly, this Old Position was angrily attacked by German, French, and English romantic poets such as Goethe, Novalis, Holderlin, Gérard de Nerval, and William Blake around the beginning of the nineteenth century. They believed that things outside human experience did have a spiritual force of their own and merited a more careful look. They sensed in it a quality that extended beyond what reason could perceive but which reason was capable of destroying. This line of poetry has been continued in this country by Walt Whitman, Theodore Roethke, Robinson Jeffers, and Robert Frost, among others.

There is a tension in all of us, says Bly, between wanting to feel a unity with all things and wanting to place a distance between us and things so that we can analyze them.

Even ecology adds to such a tension--at one point Bly accuses ecologists of thinking in the same rigidly homocentric, rational, inadequate terms about the environment as everyone else, only in a more refined and sophisticated way. "When an ecologist says, 'The maximum input we can have of non-organic materials before the system reaches its saturation point is about 30%,' he is using Old Position language. In such language the body is exiled, the soul evaporated, the mind given executive power."[6] But later he praises biologists for their ability to "see" things, and says that the increased interest in analyzing communities and ecosystems "is something to rejoice over...looking at things puts one in the mood for praise."[7] Bly feels the first step for many people is simply getting them to admit that the nonhuman environment is important enough to warrant looking at it at all, even in an Old Position way; the second step of feeling a nonrational kinship extend across the analytic gap may follow.

A number of poets have made worthy contributions to this genre since 1945, and no treatment here will be anything other than superficial. A few--Kenneth Rexroth, A.R. Ammons, Gary Snyder, and Denise Levertov--particularly stand out for their illumination of Goethe's notion that in nature, "each of her creations has its own being, each represents a special concept, yet together they are one."[8]

Kenneth Rexroth paved the way for many of these ideas, breaking out of the fashionable introspective trend in modern

poetry to consider the experience of wilderness:

> We climbed through tatters of cloud
> To the east ridge and walked through
> The dripping, sparkling fir forest.
> In the meadow at the summit
> We ate lunch in the pale sun,
> Ever so slightly cooler,
> And watched the same long autumn
> Mares' tails and came back down the
> Steep rocks through the soaking ferns.
>
> (from "Mary and the Seasons")[9]

A.R. Ammons studied biology in college and is more a poet of natural processes than natural objects, interested in the movements and relationships of things. But while he celebrates scientific understanding, Ammons' vision is also mystical, accepting and glad that the mind is incapable of rationally understanding nature, for that understanding would trap and limit our relationship to it. Our inability to pigeonhole the mysteries around us gives a tremendous freedom in how we can approach them. On a walk near some sand dunes on a New Jersey shore he realizes

> the news to my left over the dunes and
> reeds and bayberry clumps was
> fall: thousands of tree swallows
> gathering for flight:
> an order held
> in constant change: a congregation
> rich with entropy: nevertheless, separable, noticeable
> as one event,
> not chaos: preparations for
> flight for winter from winter,
> cheet, cheet, cheet, cheet, wings rifling the green clumps,
> beaks
> at the bayberries
> a perception full of wind, flight, curve,
> sound:
> the possibility of rule as the sum of rulelessness:
> the "field" of action
> with moving, incalculable center:

. . . . . .

I see narrow orders, limited tightness, but will
not run to that easy victory:
still around the looser, wider forces work:
I will try
to fasten into order enlarging grasps of disorder,
widening scope, but enjoying the freedom that
Scope eludes my grasp, that there is no finality of vision,
that I have perceived nothing completely,
that tomorrow a new walk is a new walk.

(from "Corsons Inlet," 1965)[10]

Gary Snyder, whose experiences include time in a Zen Buddhist monastery and as a forest lookout in the Cascade mountains, is one of the most willing of the poets to step outside of human preoccupations and wonder what really, after all, is going on beyond our noses. In the poem "Foxtail Pine" he chides himself for labeling trees thoughtlessly, evading the real questions of what they are:

bark smells like pineapple: Jeffries
cones prick your hand: Ponderosa

nobody knows what they are, saying
"needles three to a bunch."

. . . . . .

foxtail pine with a
clipped curve-back cluster of tight
five-needle bunches
the rough red bark scale
and jigsaw pieces sloughed off
scattered on the ground.
--what am I doing saying "foxtail pine"?

these conifers whose home was ice
age tundra, taiga, they of the
naked sperm
do whitebark pine and white pine seem the same?
a sort of tree
its leaves are needles
like a fox's brush
(I call him fox because he looks that way)
and call this other thing, a
foxtail pine.[11]

Denise Levertov, a poet concerned with myth and what she terms "organic form," celebrates the energy we can feel in animals and the serenity they offer by their indifference to humans in "Come into Animal Presence":

> Come into animal presence
> No man is as guileless as
> the serpent. The lonely white
> rabbit on the roof is a star
> twitching its ears at the rain.
> The llama intricately
> folding its hind legs to be seated
> not disdains but mildly
> disregards human approval.
> What joy when the insouciant
> armadillo glances at us and doesn't
> quicken his trotting
> across the track into the palm brush.
>
> What is this joy? That no animal
> falters, but knows what it must do?
> That the snake has no blemish,
> that the rabbit inspects his strange surroundings
> in white star-silence? The llama
> rests in dignity, the armadillo
> has some intention to pursue in the palm-forest.
> Those who were sacred have remained so,
> holiness does not dissolve, it is a presence
> of bronze, only the sight that saw it
> faltered and turned from it.
> An old joy returns in holy presence.[12]

Levertov, and her colleagues, are among those training their sight back to this "holiness."

The connection between such poetry and a moral sense to take care of rather than mistreat the world is not a given one. But as Berry says, "The natural effect of such poetry is the religious one of humility and awe. It does not seem far-fetched to assume that this religious effect might, in turn, produce the moral effect of care and competence and frugality in the use of the world."[13]

Annie Dillard (1945-)

In her book of prose Pilgrim at Tinker Creek (1974), poet Annie Dillard writes of discovery on her rural property in Virginia's Blue Ridge Mountains. She is a pilgrim for visions; on a journey to see and understand where she is, why she is here, and what is around her; to "view the landscape, to discover at least where it is that we have been so startlingly set down, if we can't learn why."[14] She doesn't understand her life, or any human life, "a faint tracing on the surface of mystery," and intends to explore and find out by immersing herself in the natural world.[15] Reluctant to impose her own wishes of what she would like to see on the things around her, she is, like the bear that went over the mountain, out to see what she can see with as few barriers of reason and objectification as possible, to resonate when "some enormous power brushes me with its clean wing."[16] Method and object cannot be separated--she is both the hunter and the "instrument of the hunt itself," and this direct approach, void of any protective shield of objectivity, is often agonizing, leading to confusion, nightmare, and despair.[17] But the visions she is granted, minute details and events acquiring meaning and joy, bring their own rewards. Though she is interested in the "big questions" of creation and existence, she tries to approach them though the "fringes" of what she can see for herself, the truths revealed in a creek or a monarch's autumn flight.[18]

Dillard thrives on paradox. One constant preoccupation

is that of beauty and horror, cruelty and joy coexisting quietly, without apparent conflict or commotion, everywhere around her. Like Edward Abbey, she is fascinated by death, decay, and the less romantically pleasing aspects of ecological processes in the world. Cruelty is a mystery that sends her reeling, as when she watches a frog's body be liquified and sucked out by a giant water bug, leaving only the skin as a hollow shell. But if she resorts to describing a hard, brute world to encompass cruelty, she runs into another equally pervasive mystery--the beauty and grace in the smallest things of the world, thistledown in sunlight and the flight of a mockingbird, all around us.

Another obsession is the lavishness, fecundity, and intricacy of creation, the apparent "spendthrift genius and extravagant care" of the creator, the bewildering abundance, waste and profligacy of life.[19] She is amazed that nature doesn't seem to fit together, in reality, as neatly as the flow charts and diagrams of cycles would have one believe, that instead of embodying economy and frugality it spills out in incredible detail and amount. "The planet is a blot of death," she says, finding the reproductive habits of the praying mantis difficult to reconcile with any notion of a benevolent order and efficiency in nature.[20]

This leads to more paradoxes, for how much fellow-feeling for other creatures can one safely feel when faced with the casualness of death everywhere? Dillard suspects that most other living things have no rational faculties.

But she tries to go beyond that negative judgment, wondering what it is that they do have that attracts and repulses us about them. She keeps herself "open to their meanings, which to impress myself at all times with the fullest possible force of their very reality."[21] Even though she is appalled at the many seemingly horrible things they do, she looks to insects for companionship because "they make up the bulk of our comrades-at-life."[22] At last, accepting the reality of animal and plant existence, she is forced to conclude that they do have awareness of their lives, despite the paradoxes that creates. Looking down into a microscope, she says, "These are real creatures with real organs leading real lives, one by one. I can't pretend they're not here. If I have life, sense, energy, will, so does a rotifer."[23] When she sits by Tinker Creek and thinks about the millions of creatures in the soil beneath her, she can "add their dim awareness to my human consciousness."[24] More explicitly, she says "the patch of bluets in the grass may not be long on brains, but it might be, at least in a very small way, awake. The trees especially seem to bespeak a generosity of spirit."[25] Dillard is most able to feel and blend into this awareness when she loses her own self-consciousness, when she manages to drive the analytic gap to nothing and merge with what she is seeing.

The final vision Dillard comes to is that cruelty and beauty, the preciousness of individual life and reality of widespread death, the inexorable pressure to reproduce and

grow and the inevitability of decay are all real. They don't fit together, they seem contradictory and imperfect, but yet she has to love it all anyway, "these tatters, these bits and pieces" that do exist rather than some perfect wholeness that does not.[26] "I am not washed and beautiful, in control of a shining world where everything fits, but instead am wandering awed about on a splintered wreck I've come to care for."[27] And she has seen enough to make the pilgrimage worth its anguish:

> One day I was walking along Tinker Creek thinking of nothing at all and I saw the tree with the lights in it. I saw the backyard cedar where the mourning doves roost charged and transfigured, each cell buzzing with flame. I stood on the grass with the lights in it, grass that was wholly fire, utterly focused and utterly dreamed. It was less like seeing than like being for the first time seen, knocked breathless by a powerful glance. The flood of fire abated, but I'm still spending the power. Gradually the lights went out in the cedar, the colors died, the cells unflamed and disappeared. I was still ringing. I had been my whole life a bell, and never knew it until at that moment I was lifted and struck. I have since only very rarely since the tree with the lights in it. The vision comes and goes, mostly goes, but I live for it, for the moment when the mountains open and a new light roars in spate through the crack, and the mountains slam.[28]

Joseph Wood Krutch (1895-1970)

Though not a poet, Joseph Wood Krutch, a literary critic turned desert lover and nature writer, is included here because he dwells on the question of whether animals possess consciousness and whether this means we must extend our moral behavior to them. A self-proclaimed "nature lover," he actively disclaims any scientific training, basing his

ideas on observation and natural history books. His own relationship with nature, particularly animals, is unabashedly emotional and speculative. In his book The Great Chain of Life (1957) he wonders aloud, as he describes their behavior, how "aware" animals are of what they are doing. If humans, who have consciousness, evolved from creatures similar to present-day animals, then it would make sense that consciousness itself evolved, and other animals possess it in some primitive form, says Krutch. Animal consciousness would be different than human, built more on emotion and senses, and less on reason, "but if we really are animals, the difference is unlikely to be as great as the difference between sentience and automation."[29] Krutch realizes that most scientists would scoff at this idea, but claims that since it is impossible to scientifically demonstrate one way or other, it is no safer to deny all thoughts, feelings and awareness to other animals than to consider it a possibility. What is apparent, he says, is that other creatures are alive, enough of a miracle and distinction to begin with to justify believing all creatures have some sort of soul, and that even protozoa have a rudimentary dim awareness.

However, there are obviously different degrees. Insects, who have very ordered survival strategies, complex instincts, and unarguable success in an evolutionary sense, nevertheless do not seem to have the emotional development and awareness of surroundings that a salamander does. Ants developed agriculture thirty million years before humans, but

they operate in a world of instinct "beyond our comprehension and almost beyond our sympathy," whereas an otter, perhaps less "successful" an organism than ants, is considered a higher animal because of its capacity to feel, react, and behave emotionally, says Krutch.[30] "Somehow or other awareness means not only intellectual grasp but emotional involvement...the touch of nature which makes us kin is not intellectual but emotional."[31] Finally, Krutch proposes that nature is working toward not only success in survival through evolution, but to consciousness and eventually intelligence as ends in themselves, not only means to survive better. Though this teleological view of evolution would make most biologists shudder, Krutch declares that not only external influences have shaped organisms, but "their own dim wills, dim minds, and dim preferences helped them along the way."[32]

As our only other companions in an otherwise lifeless universe, animals are a source of joy and consolation that we do not want to lose contact with. Hearing birdsong affects us because of the union created between singer and listener: "we want to divine what the bird is saying to himself and to his fellows."[33] But Krutch is aware of, though chooses not to dwell on, the apparent horror and cruelty in much of the natural world. It is not some "benevolent social union," but functions with an often brutal modus vivendi.[34] Like Dillard, he observes that nature seems to be "careful of the type, but careless of the single life," and

he wonders what prompted his own human impulse to save a bat drowning in a swimming pool out of compassion--a compassion nature seems to lack.[35] But also as with Dillard, the existence of joy is even more of a puzzle, and a more important one, than the existence of cruelty. The "tremendous fact" to Krutch is that other creatures appear to be "joyous whether or not it seems to us they should be."[36]

Given this, Krutch wonders what our attitude to the natural world and its creatures ought to be, predicated on a recognition that humankind now has the ability to obliterate many of them. In what has become a familiar pattern, Krutch pulls in ecology as the "factual, scientific aspect" that demonstrates "those more and more remote interdependencies which are crucial even for us."[37] But he sees shortcomings in only adopting ecological utilitarianism; alone, it will not "save very much of the beauty and variety of the natural world. They can be preserved only if man feels the necessity of sharing the earth with at least some of his fellow creatures to be a privilege rather than an irritation."[38] Both science and simple "reverence for life" will be necessary to combat the destruction facing the natural world:

> Increasing awareness of what the science of ecology teaches promises to have some effect upon the public's understanding of the practical necessity of paying some attention to the balance of nature. But without reverence or love it can come to be no more than a shrewder exploitation of what it would be better to admire, to enjoy and to share in...How can [humankind] come to accept, not sullenly but gladly, the necessity of sharing the earth?[39]

Better science alone, without a shift in attitude, says Krutch, will only teach us how to be a bit smarter in the ways we manipulate and alter the earth to suit our own desires. And he suggests this old attitude is morally wrong; the earth doesn't exist only to further human ends but for the expression of joy by all its creatures.

Wendell Berry (1934-)

It is fitting to present Wendell Berry as a final author: a poet who is concerned with cultural trends and has embraced ecological concepts as well, he is a striking example of the multidiscipline style of many of these writers. Berry's home is the Kentucky hill country, which he returns to again and again for insights. He also feels a close companionship with other creatures, but, unlike Dillard, he does not feel he must lose his own self-awareness to communicate with them:

> I haven't been conscious before of how invariably when I have sensed or imagined the life of another creature, a tree or bird or animal, I have had to begin by imagining my own absence--as though there was a necessary competition between my life and theirs. I looked upon my ability to imagine myself absent as a virtue. It seems to me now that it was an evasion. I began this morning to feel something truer--the beginning of the knowledge that the other creatures and I are here together.[40]

His poem, "The Peace of Wild Things," reveals this graceful sense of communion:

> When despair for the world grows in me
> and I wake in the night at the least sound
> in fear of what my life and my children's may be,
> I go and lie down where the wood drake
> rests in his beauty on the water, and the great heron feeds.

> I come into the peace of wild things
> who do not tax their lives with forethought
> of grief. I come into the presence of still water.
> And I feel above me the day-blind stars
> waiting with their light. For a time
> I rest in the grace of the world, and am free.[41]

In his collection of essays, A Continuous Harmony (1972), Berry blames Christianity for much of the separation between the creator and creations, and says this hatred of the material world has now reached the "terrifying climax" of an impending apocalypse that differs significantly from the ones prophesied by religions; while those are always caused by God, this one would be instigated by mortal men.[42] In trying to remedy this situation, he says, poets must turn to the root source, the rift between humans and environment, and go back to humility, caring, and competent thinking about the world.

Berry is passionately concerned with culture and agriculture, believing that we have lost touch with the joys and quality of life that come from working the soil. He despises modern, machine-oriented agribusiness and spares them no punches in his book The Unsettling of America (1977); he fears a future where

> the people will eat what the corporations decide for them to eat. They will be detached and remote from the sources of tneir life, joined to them only by corporate tolerance. They will have become consumers purely--consumptive machines--wnich is to say, the slaves of producers.[43]

Berry speaks with nostalgia for the hardworking, independent, agrarian way of life and the culture it generates. He detests efficiency as the modern god that stresses waste,

cheapness, and quantity over quality, and says that agriculture can not afford to be governed by efficiency alone:

> the discipline proper to agriculture, which survives not just by production but also by the return to wastes to the gorund, is not economics but ecology. And ecology may well find its proper discipline in the arts, whose function is to refine and enliven perception, for ecological principles, however publicly approved, can be enacted only upon the basis of each man's perception of his relation to the world.[44]

He speaks of entering an "era of ecology" where protection of the earth will be conscious rather than based on superstition, incorporating both a religious and scientific vision. We will "realize that we do not live on the earth, but with and within its life. We will realize the earth is not dead like the concept of property, but as vividly and intricately alive as a man or a woman."[45] Science will provide the knowledge and methods for action, but such rules have to be felt in order to work. In language strongly reminiscent of Leopold, Berry says ecological rules must be "carried beyond abstraction into the specific relation between each man and his place in the world."[46] Poetry's role in this vision is to aid communication, become the language of such an era, "a power to apprehend the unity, the sacred tie, that holds life together."[47] We will learn to take delight in protecting the earth rather than considering it an onerous chore.

> The change of mind I am talking about involves not just a change of knowledge, but also a change of attitude toward our essential ignorance, a change in our bearing in the face of mystery. The principle of ecology, if we will take it to heart, should

> keep us aware that our lives depend on other lives and upon processes and energies in an interlocking system that, though we can destroy it, we can neither fully understand nor fully control. And our great dangerousness is that, locked in our selfish and myopic economics, we have been willing to change or destroy far beyond our capacity to understand. We are not humble or reverent enough.[48]

In Wendell Berry the various perspectives blend and interlock so harmoniously that one scarcely notices how broad-reaching his vision is.

Summary

Humility, interdependence, and urgency appear yet again in these writers' attempts to deal with mystical and moral aspects of the environmental problem. But once again the approach is not one-dimensional--they are writing about what they see around them, describing life and death alike, not closing their eyes to reality and living in a world of pleasant delusions. Awareness of what contact with the earth can mean to people, as well as a grasp of ecology, bolster rather than demystify their probings into the fundamental nature of things. They are not running away from science but augmenting it.

NOTES

[1]Lynn White, "The Historical Roots of Our Ecologic Crisis," Science, 170 (Mr 10 '67), 1205.

[2]White, p. 1206.

[3]David Ehrenfeld, The Arrogance of Humanism, (New York: Oxford University Press, 1978), p. 208.

[4]Wendell Berry, A Continuous Harmony, (New York: Harcourt Brace Jovanovich, 1972), p. 4.

[5]Robert Bly, ed., News of the Universe, (San Francisco: Sierra Club Books, 1980), p. 10.

[6]Bly, p. 13.

[7]Bly, p. 254.

[8]As quoted in Ehrenfeld, p. 177.

[9]Kenneth Rexroth, Collected Shorter Poems, (New York: New Directions, 1966), p. 262.

[10]Ammons, A.R. Selected Poems, (Ithaca, New York: Cornell University Press, 1968)

[11]Bly, p. 142-3.

[12]Paul Feroe, ed., Silent Voices (St. Paul, Minnesota: Ally Press, 1978), p. 42.

[13]Berry, p. 16-7.

[14]Annie Dillard, Pilgrim at Tinker Creek, (New York: Bantam Books, 1974), p. 12.

[15]Dillard, p. 9.

[16]Dillard, p. 13.

[17]Dillard, p. 13.

[18]Dillard, p. 131.

[19]Dillard, p. 130.

[20]Dillard, p. 178.

[21]Dillard, p. 140.

NOTES (continued)

[22]Dillard, p. 66.

[23]Dillard, p. 124.

[24]Dillard, p. 96.

[25]Dillard, p. 115.

[26]Dillard, p. 246.

[27]Dillard, p. 248.

[28]Dillard, p. 35.

[29]Joseph Wood Krutch, The Great Chain of Life, (London: Eyre and Spottiswoode, 1957), p. x.

[30]Krutch, p. 68, 72.

[31]Krutch, p. 73.

[32]Krutch, p. 196.

[33]Krutch, p. 217.

[34]Joseph Wood Krutch, The Best Nature Writing of Joseph Wood Krutch, (New York: William Morrow, 1969), p. 352.

[35]Krutch, The Best Nature Writing, p. 304.

[36]Krutch, The Great Chain of Life, p. 226.

[37]Krutch, The Best Nature Writing, p. 374.

[38]Krutch, The Great Chain of Life, p. 160.

[39]Krutch, The Great Chain of Life, p. 161, and The Best Nature Writing, p. 383.

[40]Berry, p. 55.

[41]Bly, p. 177.

[42]Berry, p. 8.

[43]Wendell Berry, The Unsettling of America, (San Francisco: Sierra Club Books, 1977), p. 74.

[44]Berry, A Continuous Harmony, p. 100.

NOTES (continued)

[45]Berry, A Continuous Harmony, p. 12.

[46]Berry, A Continuous Harmony, p. 14.

[47]Berry, A Continuous Harmony, p. 15.

[48]Berry, A Continuous Harmony, p. 84.

CHAPTER V

CONCLUSION:

A NEW BEGINNING

In sketching the ideas of these writers, I have tried to show that despite their differing backgrounds and styles, they are all saying remarkably similar things. I have also suggested that the common stick prodding them to these conclusions was the spread of modern technology and the power to contaminate and annihilate life, necessitating a careful look at what attitudes we did possess, what secret desires to change the earth, we now had the means to fulfill. And finally, I have attempted to demonstrate that these writers realized the answer of the question of how we should behave toward the environment, if there is an answer, can not be considered within a single discipline but sends ripples through a broad spectrum of human thought and experience. Humanists can no longer ignore science, or vice versa.

It is worth speculating for a moment on the difference between the motivations that spurred these writers and the rationalizations they utilized in their writings. I submit that with few exceptions, the nonrational convictions they acquired from their personal feelings and experiences were the actual motivating force, but they leaned heavily on the rational, scientifically based, universally comprehensible logic of ecology as a vehicle for expressing these convictions. As for the origin of those--it seems to come from their having looked around them, as simple-minded as that sounds. With whatever bias they began with when they started looking, they all started to see things in the natural world that provoked these feelings. Field biologists and field

poets share the common fact that they are in the field, open to the things they could perceive around them and with time, often alone, to absorb and think about them.

With the rise of ecology as a science, no longer could such concepts be dismissed as the freakish, sentimental leanings of a few. Biologists suddenly discovered themselves to be moral authorities on the subject, able to hand down policy judgments and maintain their foundation in science. Other disciplines working on the basis of an environmental code of conduct needed biology for the simple reason that no philosophy, however beautifully worded and fervently believed, could be implemented without scientific know-how. Ecology had become a way to balance science and nearly every other human pursuit. In a world where few things made sense, it is no wonder that so many grasped on to an idea which seemed to say it all, that allowed one to be practical, self-righteous, and in favor of preserving beauty all at the same time.

But ecology, by itself, is not enough, as many of its strongest spokespeople freely admit. The ultimate nature of these questions means that we should also simply trust our feelings at times without being obliged to bring in rational arguments, even ecological ones, for support. If it feels wrong to watch the meadow across the street be bulldozed, then that is reason enough to protest it. We tend to mock those feelings, when in fact we would be automatons without them.

This lesson hit home to me when I sat in a nearly empty auditorium at Skyline College and listened to the last words of testimony given at a congressional field hearing on off-shore drilling along the California coast. There had scarcely been breathing room in the morning, when Governor Jerry Brown had testified, but it was now late afternoon and the big names, as well as most of the audience, had gone home. The two remaining congressmen looked exhausted, I was one of three remaining press people out of an original corps of fifty, and we were all sick to death of hearing endless arguments showing to any practical soul's satisfaction that the proposal being debated was completely cock-eyed.

Two of the dozen or so remaining people in the audience stood out from the rest--he was bearded, heavy set, wearing a striped wool tunic and a huge gold-colored medallion and she had long, straight black hair, a dark serape with fringes sweeping the floor, and bare feet. In short, they were hippies, but well over the age to be trusted. They sat through eight hours of testimony in order for the chance to speak as citizen witnesses. At last it was their turn.

"What nobody here today has talked about is the real question at stake here, and that's whether it's right to go punching holes in our mother--the Mother Earth," he began earnestly.

The congressman from Indiana, who advocated drilling, visibly rolled his eyes and leaned back in his chair to whisper something amusing to a pretty assistant in pumps and

dark blue blazer. She giggled. The congressman from Connecticut, who opposed the drilling, stiffened and shuffled through his papers, oh-dear-not-one-of-these written across his face. And I, too, playing the objective journalist, thought the man's arguments pathetically emotional, out-of-place, and irrevelant in the sophisticated, highly factual legal debate being waged. I have since come to wonder about this. What brought people there to testify was that they didn't like the thought of drilling--the rational, practical reasons for opposing it were all tools used in arguing for what essentially was a feeling that in many cases sprang from no rational base whatsoever. But of all the people there, only this man dared to say that it was his feelings that were being violated, and that that alone was important. I have since wondered who was being irrevelant and who, even if his feelings could be considered to be "on the fringe," was at least being honest about them.

The synthesis continues. Satisfying as Aldo Leopold's land ethic sounds, it has not dissuaded others from trying to express something better, to explore, refine, and add new ideas that could help make something like it come to pass. The very fact that the question is so unanswerable keeps it interesting enough to still be asked. There are signs this interest is spreading. Classes in environmental ethics are appearing in major universities. Philosophers such as Ernest Partridge are applying classic ethical inquiry to answer questions like: do future generations have rights?

Law is getting into the act as well, with Christopher Stone's landmark book Should Trees Have Standing? paving the way for fish and other nonhuman creatures to appear as plaintiffs in court cases. Business, too, has begun to consider the question of environmental ethics from the broader standpoint of corporate social responsibility, and to take a few steps, albeit usually of the enlightened self-interest variety, toward reducing environmental degradation, as documented by writer Robert Cahn in Footprints on the Planet (1978). And the clear, moving essays of Peter Steinhart in Audubon Magazine are setting new standards for excellence in environmental writing.

As many of these writers realized, the question of how to live within rather than on the earth, like the question of how to achieve social justice or how to treat one's neighbor, will never be simply answered, and it may be beyond our capability to do so. But the important thing, they say, is to continue to try our best nevertheless, for the act of trying is itself rewarding and worthwhile. They have helped instill the urge to try into our collective consciousness. And we owe them much for having done so.

EPILOGUE

This project first began to take form in my mind when well-meaning people asked me last year what I wanted to be when I grew up. Always somewhat apologetically, I would mutter something about being a writer. They'd nod gravely but refuse to let it go at that. "What do you want to write about?" I found my answers were distressingly varied depending on who was doing the asking. I'd tell my biology professors that I wanted to use my science training to write biologically accurate pieces on environmental subjects. My English professors got the vague idea that I enjoyed poetry and fiction but always tended to place my characters outdoors, with the character of landscape somewhat dominating the human ones. Newspaper editors soon learned that I was mainly interested in covering environmental stories, and that pieces on new University subcommittees were best assigned elsewhere. Finally, noticing that there was at least one similarity in these answers, I began telling people that I wanted to be an environmental writer. Unfortunately, enough people went one step farther, asking "what is an environmental writer?" that I soon realized I didn't really know myself. However, they often added something else that began to give me a clue as to what the answer might be. "You mean be like Rachel Carson, or Edward Abbey, or Wallace Stegner," or any of a dozen other names, they'd say. It was then my turn to nod gravely, and the topic would die, as they were usually either impressed

by my audacity or polite in covering up their skepticism.

I, meanwhile, thought about why around fifteen names seemed to consistently come to people's minds when the term "environmental writer" was mentioned. The more I thought about it, the more I knew I wanted to take a close look at these writers and try to understand what they said and why they were associated together. Intellectually, I was intrigued by their ideas and how they had developed their thoughts. Personally, I needed to find out more about them in order to discover for myself why I wanted to become part of their tradition.

This project, then, has often been a quest of sorts. I have gone searching through these authors with a thesis to prove, looking for certain evidence and characteristics, but I have also simply tried to get to know them better. In a way I have seen myself as a young greenhorn searching the old masters for clues, for insights, for wisdom and help. Needless to say, the quest has always been one of discovery and delight, and I believe that I have found what I was looking for.

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