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Growing with the earth : A manual for mentors

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GROWING WITH THE EARTH: A MANUAL FOR MENTORS

by

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For/From Lew

Lew Welch just turned up one day,
live as you and me. "Damn, Lew" I said,
"you didn't shoot yourself after all."
"Yes I did" he said,
and even then I felt the tingling down my back.
"Yes you did, too" I said -- "I can feel it now."
"Yeah" he said,
"There's a basic fear between your world and
mine. I don't know why.
What I came to say was,
teach the children about cycles.
The life cycles. All the other cycles.
That's what it's all about, and it's all forgot."

Gary Snyder
Axe Handles

Light, Kenneth D., Summer 1984 Environmental Studies

Growing with the Earth: A Manual for Mentors

Director: Dr. Doris A. Simonis

The author proposes an alternative approach to environmental education, one based on an ethical and spiritual relationship between humankind and Earth. Also hypothesized is a stage-specific model for the development of environmental ethics.

This booklet provides both philosophical bases and strategies directed toward the development and support of environmental mentors: parents and adults committed to nurturing the whole-person maturity of children to its highest potential.

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Author's Note

Throughout the text of this book the terms Nature, the Earth, and the Land are used synonomously. These all refer to the natural world that is not dominated by human influence, activity, or artifact, as compared to those portions of the biosphere that are so dominated. This definition is not as precise as I would like it, for the influence of the technological society can be measured anywhere on the planet if one only looks closely enough.

These terms are capitalized when they appear because I think they ought to be.

Preface

Mentor was a Greek, a friend of Odysseus, to whom he entrusted the care of his household and the education of his son, Telemachus, when setting out on his long journey to Troy. Hence, a wise and faithful counselor. I suppose when most of us think of someone as a mentor, that person is generally someone older than we are who has experienced more of life than we have or has experienced it in a different way, and who possesses a wisdom from the patterns and connections made along the way. It is in the natural and unpretentious sharing of this wisdom that the mentor serves his younger friends.

If you are a person who accepts the responsibility you have as a parent, family member, or an adult friend to promote the growth of children to their highest potential, and if you have the love and respect for childhood and children required of a true mentor, then the contents of this book may help you gain access for your child-friends to their birthright--the mentorship of the Earth. It is to mentors that the growth of our young people should be entrusted, and it is to them that this writing is dedicated.

Chapter One

Introduction

My involvement in environmental education began in the classrooms of several small public schools. As a teacher who really believed in the importance of an awareness of man's relationship to the environment, I made a point of including in my science lessons what I thought to be a beneficial treatment of the subject. For the past two years, however, I have devoted myself to a greater understanding of the problems we have created in our relationships to the Earth, and to what was for me the logical next step--what can we do about them? As my understanding of the nature and scope of the human impact on this planet has increased, faith in the effectiveness of my past efforts to prepare young people to assume positions of responsibility for the Earth has eroded.

This led me to design an alternative approach to "environmental education" that strove to directly address what I perceive to be the many weaknesses in the current state-of-affairs. My aim has not been to suggest modifications of the present educational system because I do not believe that latitude exists therein for the radical nature of what I am proposing.

This book is organized around what I believe to be the fundamental qualities of a mentorship approach to environmental education:

1) a commitment to improve education for our young people, a commitment grounded in both a knowledge of the limitations of the

current educational system and a belief in the merits of informed self-reliance.

2) the development of a sensitive and intuitive understanding of children--how they learn, how they grow--that is particularly geared to their emotional, spiritual, intellectual, biological, and social age-specific needs. (Hereafter these will be referred to as a child's "whole-person" needs.)

3) a desire to promote the growth of a personal philosophy regarding humankind's role in the biosphere.

4) an understanding of, and belief in the importance of values development to the growth of a mature relationship between humankind and the natural world.

5) a commitment to the nurturance of an ethical and spiritual relationship to the Land as an integral function in the maturational process through which children become adults.

6) the acceptance of an approach in which there is no substitute for intimate "whole-being" experience and interaction with the child's total environment in the context of caring and skillful mentorship.

I believe that environmental mentorship must be firmly grounded in a philosophy that is connected to, and receives its energy from, an essentially optimistic belief that our society can overcome and survive the current ecological state-of-affairs. In this regard I am a futurist; as a parent I could not be otherwise.

As a society, we are altering our world so rapidly, and in such profound ways, that the danger of exceeding the Earth's capacity to heal itself is fast becoming a reality. We are leaving our children a

legacy of environmental dismemberment, toxic contamination, and societal degeneration in the name of economic "progress" and personal greed. The problem is more than resource exploitation and exhaustion, pollution, global overpopulation, or a multitude of interrelated symptoms; we are experiencing what amounts to a crisis of culture. Just as the 1973 Arab oil embargo was not a crisis of supply but a crisis of consumption, our environmental woes are not the result of misapplied rationality but of societal irrationality. The values revealed in our relationships to the Land show an ever-progressing extinction of connectedness, a degeneration of spiritual and ethical relatedness that threatens to bring about the self-destruction of our species and even the death of the biosphere.

Environmental mentorship is therefore vitally concerned with the formation of environmental values, for it is through the ways in which we value our world that we gain the commitment to act. The survival of our species and the integrity of the ecological interactions upon which all biotic citizens of this planet depend are themselves dependent on a future that includes a radical transformation in the way we feel about the Land, in our attitudes, values, and ethics. The formation of values regarding the Land is therefore much more than an intellectual exercise; it is integral to the growth of our ability to participate in such a transformation.

I resist the temptation to argue the relationship between values and actions, but will offer that the ultimate philosophical goal of this approach--which is the development of wholistic maturity as an expression of striving for the highest of human

potentials--presupposes a close correlation between the two. My purpose is not, however, to offer a utopian vision describing the possible outcome of our actions, but to assist in the process of developing an enlightened approach to change.

What follows are descriptions of the sections comprising this work. They are included to provide you a more detailed context for the ideas presented and also to elaborate on the six objectives already specified for mentors.

Chapter Two offers a rationale for alternatives to "environmental education" as currently practiced in the public schools and as presented by private environmental organizations and federal agencies. These programs are not only ineffective in meeting their own goals, but more importantly, are failing to prepare our young people to participate in future ecological survival. We shall see that "environmental education" is not only a sporadic phenomenon in this country, but in most cases it is an educational waste of time as well.

The ineffectiveness of these programs is also substantiated in Chapter Three, which offers a cumulative sequence of theory and understanding of children's whole-person needs that is based on the work of several educational theorists and philosophers. It begins with the classic work of Jean Piaget and his theory of intellectual development: it then considers some Piagetian ideas extended by Joseph Chilton Pearce, who ties the growth of human intelligence to a biologically-directed plan: finally, it goes on to the work of Paul Shepard, which shows the interrelatedness of both Piaget and Pearce and further ties the growth of human potentials to close interaction

with the natural world. Also permeating this section, as well as the entire book, are the contributions of John Holt, whose insights into the lives of children and philosophy of learning have been deeply inspirational.

The next section deals with "Deep Ecology." This current philosophical movement represents an extension of thought beyond (or "deeper" than) the interconnections of ecology as a science and environmentalism as a "defense" of Nature, into the realm of relationships between humankind and the environment that are ethical as opposed to economic. The ethical questions of right and wrong are based on principles that question the fundamental premises of a society in which "right" is determined as that which is beneficial to humans, and "wrong" is that which is not beneficial. An example is the principle of "biological egalitarianism," where all citizens of the Earth have the equal right to live and blossom. It denies an anthropocentric (literally "man-centered") view of Nature for one in which humans are seen as "plain members" of the biotic community and mandates respect and reverence to all life forms. Some deep ecologists have carried this idea even farther to include the inanimate members of the natural environment.

Guided by caring mentorship, children are natural deep ecologists. The principles offered in this eco-philosophy will, I believe, occur by themselves to children allowed to grow naturally close to the Earth. But for those of us whose childhood was cut-off from experiencing the Land in this way, exposure to these ideas will assist us in our mentorship responsibilities. Remember, an ethical

relationship to the Earth is a primary goal of environmental mentorship. We must develop an insightful, intuitive, reflective, and articulate understanding of what constitutes proper or improper actions on the part of humans. Without the temperance of an environmental ethic, the technological power we possess to alter the landscape far outweighs our ability to make mature decisions regarding our actions. One needs but to look around to gauge the level of ethical maturity devoted to many of the decisions made thus far.

Chapter Five is devoted to the importance of values development to the goals of environmental mentorship. Much attention has been directed to the formation of values in our public schools because the transmittance of societal values has been historically one of education's main objectives. As a result, many psychologists and educational theorists have devoted considerable effort to developing an understanding of the ways in which personal values are formed. Some of these ideas are indeed useful to our purposes. Unfortunately, the theories of moral development proferred by Piaget, Kohlberg, Gilligan, and others have been applied thus far (although sporadically) to the transmittance of societal values that view the Land from an ethic of human subjugation and domination. For our purposes, though, these ideas can just as easily provide valuable insight into the formation of values that more closely fit the feelings experienced from interactions with the living Earth.

The body of Chapter Six uses a new model to describe the development of an ethical relationship to the Earth. It was synthesized by casting the classical ideas of moral development, dealt

with in the previous section, into the context of the Earth instead of the society. The resultant hypothesis provides a structure for both organizing and supporting the major themes presented in this writing. This summary will also include suggestions for putting the ideas of environmental mentorship to work, or perhaps more accurately - to play!

Chapter Two

The Ecology of Environmental Education.[1]

What I am advocating is that, as parents, adults, mentors and would-be mentors, we need to get involved in our children's education, and that our "point of entry" should of necessity be environmental education. This is due to the urgency of our environmental crisis, and also because the schools upon which we have depended and to whom we have, in many cases, abdicated the responsibility for the education of our youth, are just not doing the job. The purpose of this section is to show what's wrong with environmental education as currently practiced and to explore a whole range of interrelated reasons for these failures in the public schools. I hope to present strong incentives for us to reclaim the responsibility for the education of our children, particularly in regards to the development of relationships to the Land.

My survey of the literature, texts, and activities for classroom-based environmental education supports the statement that a rather large majority of the lessons focus on ecology. The topic is generally attached to the science curriculum, often to biology, and in less complicated forms is included in the elementary curricula as well. As a science, ecology has done much to help us understand some of the workings of ecosystems, and its emphasis on connections can lead to important wholistic concepts. However, ecology alone as a major component of environmental education is insufficient to address the needs of our young people in a world left to them in ecological

shambles.

Another significant fraction of environmental education is usually concerned with the goal of "creating an awareness of environmental problems." Along with basic ecology, attempts at "awareness" are directed toward a philosophy of education that was originally proferred by Thomas Jefferson. His philosophy was that the purpose of education was to create an informed citizenry as a prerequisite to the democratic process. I'll grant that being informed makes us all better voters, but I do not buy the fact that this "awareness" can lead to the kinds of effective social actions that need to occur if we are to transcend the current ecological dilemma. In fact, I will argue strongly that in most cases the schools are doing a poor job indeed of adding even the relatively small contribution of awareness. Some of the reasons are internal, but the real indictments are not of the schools, but of the society in which they operate.

Perhaps, for our purposes, a useful strategy would be to look first at what is happening in the schools. Then we can follow the connections external to the classrooms in an attempt to understand better the role of environmental education in society, and in education in general. Our next logical step will be to trace the reasons for our society's attitudes concerning environmental education in the context of current and past value systems through which we have related to the natural world.

Environmental Education in the Schools

For a number of reasons most public schools are doing very little with environmental education. In the elementary schools, most teachers, besides lacking professional preparation, simply do not have the time to include environmental education into their classroom subjects. Many are currently scrambling to deal with back-to-the-basics curricula and are increasingly coming up against questions of accountability by parents and administrators.

Because environmental education has been assigned a low priority, if given any consideration at all, there are no incentives or directions coming from administrators for teachers to make additions to their already overloaded curricula. Why is this so?

With the rise of the environmental movement after Earth Day 1970, the educational pendulum swung quickly toward a shift from the conservation education and nature study programs of the post World War II era, toward a more ecological treatment of the subject. Added impetus was provided by the 1973 Arab oil embargo, which provided us with an "instantaneous" energy crisis. Funds started moving out of Congress and some energy conservation curricula were funded and put together. Unfortunately, ideas go in and out of fashion very quickly in our society. As the "crisis" passed, and the lines at the gasoline pumps disappeared, so too did much of the impetus for this aspect of environmental education. What was left was a residue of ecology, natural resource conservation and management, and a smattering of nature study and outdoor education.

Part of what happened is illustrated by a recent conversation

with a very dedicated elementary school teacher, who not only works hard at bringing solid concepts in environmental education into her classroom, but also has prepared a manuscript for an elementary text dealing with the subject. She wrote the book to address one of the main problems she perceived in her efforts to get a district-wide environmental education program started: the shortage of quality educational materials. Her attempts to find a publisher are a real study in corporate influences and their power over the content of school curricula.

The manuscripts she has sent out to the large publishers have returned with rave reviews from editorial assistants, but have been "top-sheeted" by reviews of upper-echelon editors who have kindly dismissed the "need for such material at this time." I tend to agree with her analysis that these editors are very much involved in corporate interests (most large publishing houses are controlled by multi-national corporations) and that the controversial nature of her approach to environmental education was seen as counter-productive to their interests.

Another reason that teachers are hesitant to integrate environmental education into their programs is that the subject is often seen as too controversial. In geographical areas such as the one where I conducted most of my interviews with teachers and administrators, and where local economies are largely dependent on extractive industries (such as logging, mining and the like), teachers espousing the virtues of conservation while criticizing unbridled resource exploitation are likely to come under fire. The last thing

that most teachers need or want is hassles with parents and administrators. It is much easier and more conducive to improved mental health to just not bother with it at all. Besides, there is most often no requirement or recommendation that environmental education be taught; it is definitely a low-priority subject. Also several interviews corroborate the statement that many teachers are hesitant to deal with controversial issues and the values that surround them. In fact I've been told by an elementary school district administrator, who as a teacher was very sympathetic to the importance of the subject and is now responsible for upcoming district-wide science curriculum adoptions, that the committee whose task it is to develop the curricula is even refraining from using the term "environmental education" in their recommendations to district officials. They fear antagonizing a minority that sees "red flags" upon hearing that term applied to the education of their children. According to committee members this constituency believes in ties between "environmental education" and the philosophy of secular humanism, which adheres to teachings of evolution, individual autonomy (man is not accountable to "higher" authority), situation ethics (right or wrong actions are dependent on the situation and not on universal principles), one-world government, and various other doctrines perceived as atheistic and anti-Biblical. Whether all this is true or not makes little difference. What does matter is that the schools are being forced in many different ways to attempt adaptations in their curriculum offerings that are fashioned out of compromise and attempts to patronize a great variety of differing views. The result

is that curriculum offerings have been diluted to the blandest pablum. Whether environmental education is watered down or absent makes little difference. As far as being a significant contribution to our society's genuine ecological consciousness, environmental education is largely a failure.

Another problem with the schools that do attempt environmental education is that the educational quality of their efforts is severely limited by a single factor--the minimum time the kids are allowed to experience and interact with Nature. In most schools environmental field trips are a once-a-year activity, if done at all. Schools make excuses (many of them justified) for the limited number of field trips and on-site environmental activities by quoting lack of funds, problems with liability, and time restraints. The obvious fact is that schools are simply not set up to provide these kinds of experiences--and their programs suffer greatly from lack of them. In a few innovative schools, however, vacant lots nearby have been annexed to provide sites for environmental education. This is, of course, a vast improvement on classroom instruction but is, sadly, a rare phenomenon in the public schools.

Schools in Society

The most pervasive problems with environmental education are not to be found within the classroom walls, but in the relationships between the schools and the society in which they operate. Environmental education programs have had to rely on traditional classroom instruction (which, as we shall explore in Chapter Three, is

often poorly done or inappropriate) to the almost complete exclusion of quality interaction with the natural world. As a consequence of this, the system of values transmitted to students is connected not to the environment but to the society. Such programs are therefore incapable of providing the necessary foundation for the growth of an ethical relationship to the Earth.

Ecophilosopher[2] Henryk Skolimowski has argued that the role of education in society is closely linked to the values and world view of the society. If education exists to promote these values and world view, then the values taught both implicitly and explicitly in the classrooms are certainly not those which will nourish the kinds of changes in our society that need to occur. Instead they are those values that have not only drawn us into the present ecological crisis, but those that will continue to accelerate their devastating effects on the Land until they are replaced, or until it no longer matters (which time hasn't come yet!).

"But what are these values?", you may ask. "Where did they come from, and how are they responsible for the unacceptable state of disharmony between us and the Land?" The answers to these questions require a brief excursion into the historical roots of the technological society.

Society in Nature

From ancient times human beings have lived in daily, organic relation with the natural order for their sustenance. By the close of the fifteenth century daily interaction with Nature characterized the

close-knit, cooperative communities of Central and Western Europe. It is little wonder that the basic metaphor (a familiar concept used to characterize a more difficult or abstract one) that held together individual, society, and the Earth was that of an organism. Resulting from the manner in which people experienced their day-to-day lives, organismic theory emphasized the connections between self and family, community, and state, and relegated a vital life force to all parts of the cosmos.

The belief that Nature was a living organism had historic origins in ancient systems of thought going back to Plato, Aristotle, and even further, and contained a large degree of flexibility to societal systems of philosophy and politics. It received much of its strength as a metaphor from the understanding of the human body, in which the total function was seen as dependent on the proper operation of individual parts.

A core element of the organic theory was that of viewing Nature as a benevolent and kind mother, who nurtured humankind as her offspring. Mother Nature was also viewed from her wild and uncontrollable side, which could cause violent storms, droughts, and general chaos. It was this perception of Nature as disorder that called forth the modern idea of power over Nature. The image of Nature as mother moved toward extinction with the coming of a mechanized and rationalized world view brought about by the Scientific Revolution. These two concepts-- that of power over Nature and that of the mechanism have become the new metaphors for the modern world.

The Scientific Revolution of the sixteenth and seventeenth

centuries provided the theoretical and philosophical groundwork in mathematics as well as science that replaced the organic world view, where change and motion were believed to be caused by an intrinsic life-force, to a view in which these movements resulted from external forces which could be studied, understood, and used to gain mastery over Nature. Francis Bacon (1561-1626), called the "father of modern science," exploited tendencies already present in his society to promote a total program for manipulating Nature for the benefit of humans. With the rise of commercialism and trade between the growing communities of Europe, the material needs of society favored a philosophy that could provide it with the necessary raw materials. Previous ethical restraints associated with the "Earth as mother" view provided restrictions to extensive use of natural resources. In some cases elaborate ceremonies were performed before any extractive actions were undertaken. Combining the developing technologies of mining and metallurgy, a philosophy based on natural magic as a means for manipulating Nature, and the emerging concept of progress, Bacon fashioned a new ethic giving sanction to the domination and exploitation of the Land.

The new mechanical philosophy of the mid-seventeenth century reunited the Earth, society, and the individual in terms of a new metaphor--the machine. Whereas the organic world-view recognized order as the function of parts within a larger whole, mechanistic thought viewed order as the predictable behavior of each part in the context of a series of laws. Where power had previously diffused through hierarchical systems, it now was seen as the result of

intervention. Together, order and power provided control over Nature, society, and the self with a redefinition of reality in narrow, utilitarian (in context of usefulness) terms through the metaphor of the machine.

Carolyn Merchant has called the "...removal of organic asssumptions about the cosmos" the "death of Nature...the most far-reaching effect of the Scientific Revolution." With the death of Nature has arrived a framework of values surrounding the concept of power that is fully compatible with the rise of commercialism and the birth of the technological society.

Through the incredible magnification of power and refinements in the technology of order brought about by the Industrial Revolution, Western societies have gained a masterful hold over the "disorder" of Nature, possessing now even the ultimate power of destruction. But as Chief Seattle once said, "What befalls the Earth, befalls the sons of the Earth."

The Dominant Paradigm[3]

Sociologist Bill Devall has offered a description of the technological society that provides a succinct account of the values system currently in place:

> "The dominant paradigm in North America includes the belief that economic growth as measured by the Gross National Product, is a measure of Progress, the belief that the primary goal of the governments of nation-states, after national defense, should be to create conditions that will increase production of commodities and satisfy material wants of citizens, and the belief that technology can solve our problems. Nature, in this paradigm, is only a storehouse of resources which should be developed to satisfy ever-increasing numbers of humans and ever-increasing demands

> of humans. Science is wedded to technology, the development of techniques for control of natural processes (such as weather modification). Change ("planned obsolescence") is an end in itself. The new is valued over the old and the present over future generations. The goal of persons is personal satisfaction of wants and a higher standard of living as measured by possession of commodities (houses, autos, recreational vehicles, etc.) Whatever its origin, this paradigm continues to be dominant, to be preached through publicity (i.e. advertising), and to be part of the world view of most citizens in North America."

For many of the people of this country, the values of the "dominant paradigm" are accepted without question. We have been raised in the shadow of these ideas whose impelling force has tightly held us separate from each other, and from the life of the Earth. Only now, in the face of annihilation, are we beginning to seek anew the paths of connectedness that can lead us not back to what is lost, but ahead to a rediscovery of our home in Earth's household.

Conclusion

As we have seen, environmental education has been used, where applied, to inform and instruct in the science of ecology and, to varying degrees, the environmental problems perceived by society. Its major weakness has been a failure to address the values systems of the society that lie at the heart and soul of our ecological crisis. But this is not to say that education in the schools is value-free. No, values are certainly being taught--those of a technological society that treats Nature as a commodity to be consumed by humans--that honor the technological fix to all problems, and that serve to prepare our young people as technicians and consumers in a society based on voracious and destructive exploitation of the natural environment. Just as education is inextricably tied to society, it is linked to the

world view of the society. It is no surprise that environmental education in this country has been defused, dissipated, and ignored. As a result, it has fallen far short of preparing our young people to participate in the transformation of our society to a rational and harmonious relationship with the natural order of the Earth. We are indeed "A Nation at Risk"[4], but not because we are falling competitively behind other "developed" nations in the industrial rapidity and economic efficiency with which we can transform the Earth into "goods" for consumption. No, it is precisely because we are uncaringly, selfishly, and irresponsibly dragging with us the other species of life on this planet, as well as the spirits of stone and sea, mountain and river, to the physical manifestation of the spiritual and philosophical death that has already occured.

Chapter Three

The Nature in Children

For years educators and child psychologists have asked the question, "How do children learn?", in attempts to match the content and style of their offerings to the intellectual needs of young people. In many cases their conclusions, reached in a variety of ways, have led to educational programs that have simply not worked. In other instances, theories have been misunderstood and misapplied. This section presents theories and philosophies of learning that address the child's human needs for growth (not just his/her needs in the context of society), that consider children as whole-persons of amazing capabilities and potentials, and that tie the ways in which children learn and grow to relationships with their environment. This chronological and conceptually cumulative sequence of theory, philosophy, and practice can both assist us in developing a wholistic and sensitive philosophy and approach to the needs of children as they grow and learn, and provide us with further impetus for our commitment to share with children our energies as mentors.

This sequence of insight and understanding is grounded in the work of Jean Piaget, who has provided some of the most profound contributions in the history of educational thought. It is not that Piaget's work is, in itself, a panacea for the problems faced by anyone striving to provide the best possible educational experiences for children, but it is a key element to an understanding of the inherent natural processes working in the minds of children that

enable them to interpret and understand the workings of their environment as steps in a maturational sequence. What he has done, besides giving us a profound insight into children's learning, is to establish a theoretical construct for understanding children's growth through interaction with their environments. We shall follow the paths taken by two others who have used his ideas as a foundation for their own. But first, Piaget.

Of Mollusks and Men

In order to better understand Piaget's theory, we can profit from a brief description of the context within which it was developed, for he was very much influenced in his life's work by his early years.

Born in Switzerland in 1896, young Jean Piaget was influenced in his life by his father, a scholar of medieval literature possessing a systematic and critical mind, and by his mother, who besides being described as energetic and intelligent, was "quite neurotic," perhaps motivating her son's studies in psychology. By the age of seven, Piaget had grown very interested in Nature, and studied birds, animals, fossils, and seashells. He began his career as a scientist at age ten, with the journal publication of a piece he wrote after observing a partially-albino sparrow in a park. But his main scientific interest, which carried him through his Ph.D. at the age of twenty-one, was the study of mollusks (malacology is the study of clams, snails etc.). After receiving his doctorate, his interests shifted from biology to psychology with Piaget's involvement as a assistant in studies concerning the development of intelligence tests.

His growing fascination with the reasons why children chose wrong answers to certain questions on the tests embarked Piaget on a lifetime study into the ways in which children learn and, specifically, how logical reasoning grows.

At the time he began forming his theory of intellectual development, the usual method of research was to begin with the adult and to look backward to the child. Piaget felt this to be in error, as the biases of a mature logic were likely to carry over to the conclusions. From his work with mollusks, Piaget knew that the place to start was not at the end of an organism's growth but at the beginning, so that the creature could show you as it grows in dynamic equilibrium with its environment. He found through his studies that the child has to build his/her own world view for interpreting and physically responding to the world, and that the child was endowed with a natural ability to make the necessary interactions with the environment. Piaget called these the "structures of knowledge" or "mental structures" with which a child organizes incoming information in order to make an intelligent response. Perhaps an example can help us to grasp what he means by these mental "blueprints."

When a child of approximately five years of age is shown two sticks, A and B, and asked which one is the longer, he has no trouble pointing to the longer stick (stick A). If he then is shown two sticks B and C, he can again correctly indicate the longer of the two (stick B). If he is then asked to compare the relative lengths of stick A and C without seeing them next to each other, he will be unable to do so. But if the same child is given this task at age

eight, he will be able to correctly conclude that stick A must be longer than stick C. Something has happened in the child's thinking that has enabled him to now make the correct deduction. This "something" is what Piaget called a "mental structure."

Although Piaget is most often commended for his further development of this theory, the concept of mental structures, and more importantly the development of these through dynamic interaction with the child's environment, is for us the most significant of his ideas. He termed the process leading to the formation of mental structures "equilibration" or "self-regulation," and considered it to be the fundamental process in intellectual development. Also significant to the process of self-regulation is the depth of the stimulating experience. What Piaget found is that merely "photographing" the environment, or being briefly exposed to it, is simply not sufficient to form the necessary structures. According to his theory, a concept cannot be assimilated until the person's mind has formed the structure which enables its assimilation. Studies conducted with congenitally blind people who have had their sight restored by surgery show that they are unable to tell the difference visually between two common objects such as a circle and a square because they lacked the necessary mental constructs.

The process of self-regulation results from the building and rebuilding of increasingly more complex mental structures as the child matures. Piaget believed that at birth, an infant has a set of basic structures that enable him/her to begin interacting with the immediate environment. These basic structures continue to guide the child's

behavior as long as the interaction is successful. But due to the internal drive to interact, he/she will sooner or later come into contact with contradictions to present mental structures. This "disequilibrium" causes a revision of inadequate structures resulting in the formation of new mental structures through the process of self-regulation. According to his theory, Piaget believes that this process underlies all intellectual development.

Piaget went on to idently four separate but interrelated stages of intellectual development and described the major mental structures for each. They are worth looking at.

Sensori-Motor - From birth to approximately twenty-four months, infants interact with their environment mainly with their muscles (motor), receiving direction from their surroundings through their senses. The child develops the ability to interpret information and express reactions through motion. During this period children normally acquire what is known as "object permanence," meaning that they know an object exists even when it is temporarily out of view. Before this time, children do not have the mental "pictures" that are needed for them to realize this fact; to them out of sight is out of mind.

Pre-operations - (2-7 years) This stage is characterized by the initial absence of, but growing ability to perform, "mental operations." The child is able to form mental images and label them verbally, but has not yet developed the capacity to carry out certain mental operations such as conservation of length or volume. An example of a child's inability to conserve volume can be demonstrated

by confronting a child in this age range with two glass containers, one tall and thin, the other shorter and wider. Pouring juice from identical half-pint containers into the two glasses results in different heights of liquid in the glasses. When asked which container contains the most juice, a pre-operational child will choose the tall, thin one. When asked why, the reason given will refer to the higher level of liquid in the taller glass without reference to the fact that it is thinner. This can also be shown by presenting two balls of clay of the same size. Once the child is satisfied that they are indeed the same size, one is rolled out into a long "snake." "Do they still have the same amount of clay?" "No, the long one has more." If you have access to someone in the age range, I urge you to try out these two Piagetian tasks. I didn't really become convinced of the validity of his theory until I tried these on my four-year-old. Amazing! This stage is also characterized by extreme egocentrism (the child accepts only his/her own point of view) and by a general rigidity in thought processes.

Concrete Operational - At about seven years of age the thinking processes of children begin to become less rigid as true operational thought processes revise and update former mental structures. The main characteristic here is that mental operations are performed on "concrete" objects and not yet on verbal information or mental pictures alone. The mental structures that are formed during this time are dependent on physical experience with the actual objects in the environment. This phenomenon is the rationale for educators' advocacy of "hands-on" activities for elementary school students.

This way of relating to problem-solving operates in adults too. For me, when I am doing carpentry work, there are times when the only way I can figure something out is to take the pieces of wood and physically manipulate them until I get it right; in other words, the mental operation has to be connected to the actual physical objects.

Formal Operational - The potential for embarking on Piaget's final stage of intellectual growth generally begins to be realized in early adolescence (between eleven and fifteen years of age). The formal operational person "...is an individual who thinks beyond the present and forms theories about everything, delighting especially in considerations of that which is not (Piaget 1976)." These thinkers are capable of reasoning with verbal or abstract elements without dealing directly with objects. For example, sometimes I am able to manipulate the pieces of board, mentally arranging and rearranging them in my mind's eye until I "see" that I've solved the problem. This brings out an important point about formal and concrete operations, that being that one does not always perform mental operations with the mental structures of the highest level attained. The mental structures of higher levels are dependent upon those formed earlier, but not all of them are replaced. What you are left with ideally is a whole series of mental structures that can be selectively called upon for reference when faced with disequilibrium from new conditions in the environment. Even as adults we sometimes use sensori-motor interactions to "feel out" new experiences.

Formal operational thinkers are able to deal with abstract concepts and ideas, forming new mental structures. In fact, in order

for you to grasp the meaning of Piaget's theory, formal operations must be used.

Before proceeding, let's pause to list some of the fundamental implications of Piaget's work:

1) Children acquire knowledge by constructing it from within, not by internalizing it directly from the environment. "To know is to invent."

2) In young children, the mental structures that form are the child's response to physical interactions with the environment.

3) Early mental operations are dependent not only on prior structures, but on "concrete" experience with actual physical objects.

4) The leap to formal operations with abstract concepts and understandings is again dependent on earlier experience and mental structures that first arose from the need to construct a view of reality based on actual physical experience.

By now you can see why, back in Chapter One, one of the principles identified as crucial to environmental mentorship was "an approach in which there is no substitute for experience and interaction with the child's total environment." Studies conducted on entering college freshmen have shown that only between 25% and 50% are capable of using formal operational thought (Kamii 1984). It is assumed that the students had not received the prerequisite experiences and interactions that could stimulate growth of mental structures upon which formal operations depend. Although Piaget's works have been available in English translations since the sixties, it seems that his ideas are not being put to widespread use, but they

have many implications for environmental mentors.

Piaget's theory ought to affect what happens in the schools. First of all, his theory of intellectual development can be found summarized (usually too briefly) in virtually all textbooks in educational psychology, but is presented formally to few teachers during their academic preparation. What is unfortunate is that if it is presented, the emphasis is generally placed on the importance of the developmental stages and not on the two ideas from his theories that he himself identified as being the most important. I've hopefully already shown you how important the idea of constructivism, or the formation of the internal mental structures, is to the growth of children's intelligence.

Piaget's other emphasis was the application of his theory to the growth of autonomy, or being governed by oneself, as opposed to heteronomy, or being governed by someone else. Piaget called autonomy the aim of education and stated that a school based on his ideas would be radically different from the schools we have today because its aim would not be the conservative goal of traditional education, which is the transmission of knowledge and values from one generation to the next, but would be the development of intellectual and moral autonomy. What Piaget meant by intellectual autonomy is for the child to learn to trust his/her own thinking and not to rely on adults to do it for him/her. Children who grow intellectually heteronomous are likely to accept unquestioningly what they are told, be it illogical conclusions, advertising, or propaganda. Children who are encouraged to think for themselves are likely to become adults who can

constructively question what is going on around them, and work to develop creative solutions.

Autonomy enables children to make decisions for themselves but it is not synonomous with complete freedom. Of course adults must protect children from touching hot stoves or from running out in the middle of busy streets. (What autonomy really is, is for the individual to take relevant factors into account in order to determine the best course of action for all concerned.)

As mentors one of our goals ought to be to promote autonomy in children. I believe the best way to do this is by allowing the child to experience the world first-hand. In response to a better understanding of not only the kinds and qualities of environmental interaction we need to provide for children, but also the context in which these activities need to occur, we need to expand upon the ideas of Piaget to include the vital dimension of mentorship.

Mentors and Matrices

In his book, Magical Child, Joseph Chilton Pearce has used the foundation blocks laid by Piaget to develop an understanding of what he calls the "biological plan for the growth of intelligence." He has departed somewhat from Piaget's focus on rational, scientific thought; Pearce believes that "all aspects of the child's experience are natural and meaningful." He has included treatment of "magical thinking," a term he borrowed from Piaget who believed that children's wish-thinking, fantasizing, and fantasy play were self-enclosed thoughts that they don't bother to check against reality. To Pearce

"magical thinking" implies that some connection exists between thought and reality; that thinking enters into, and can influence, the actual world. What Pearce has to say that is most relevant to our quest concerns both evidence for the existence of a genetically predetermined maturational sequence in children, and more importantly, how our roles as mentors can be crucial to its proper unfolding.

The author follows a very Piagetian strategy for introducing the concept of a biological plan by relating it metaphorically to an already formed concept - that of the genetically planned development of the human body's physical growth. Through genetic coding, infants and children of all races and cultures follow the same pattern of bodily growth and development. The appearance of baby teeth, six and twelve-year molars, as well as puberty's maturation of sexual characteristics occur in the same sequence for children all over the world. "A corresponding, beautifully coordinated biological plan for the development of intelligence" occurs synchronously (Pearce 1971). According to Pearce, in order to allow the full development of intelligence, we must both acknowledge and cooperate with the unfolding of this plan. Nature has given each individual the potential for success in reaching maximum potentials. Unfortunately, what Nature cannot provide is the assurance that the biological plan will receive the necessary nourishment.

The essence of Pearce's ideas involve what he calls "matrix shifts (Pearce 1971)." "Matrix" is the Latin word for womb. From this root we get words such as matter, material, mother etc., referring to the basic physical stuff from which life is composed. The matrix is

formed by mental structuring of knowledge about the matrix and sensory interaction with the content and possibilities provided by that matrix. The matrix always provides the energy for this exploration and is the "safe place" in which the exploration occurs. Matrix formations and shifts are the biological plan's scheme for providing the new interactions that in turn form new mental structures.

So what are these matrices, these "safe places" where interaction can occur in the context of caring nurturance? According to Pearce, the first one is the womb, where the developing fetus prepares for eventual separation by establishing biological and sub-conscious bonds to its mother. The next movement occurs at birth where immediate physical and psychological bonding to the infant's mother provides acceptance into the new matrix. In time the infant can then move to interact with the world in the context of the mother matrix until the transition to the Earth matrix occurs, where the child has found the security of a natural place in the order of things--a bonding to the Earth itself. After age seven or so the shift is to his/her own personal power provided by the Earth matrix. The progression of matrix shifts moves from concreteness to increasing abstractness.

In order for the matrix shifts to occur, the child must develop bonds with the present matrix and also with the next matrix into which the child must eventually shift. This bonding allows the formation of bridges between matrices so that what is new and unknown in the new one will have sufficient similarity to the old matrix so that the child can move on to new mental structures. Because Nature programs the process for success, it would never (by its own choice) expel the

child into a new matrix without sufficient preparation because the child would be unable to adapt for survival. The child moves naturally to a new matrix by standing on the old.

Just as we are reliant upon prior mental structures in our progression to new ones and carry these along with us, early matrices are not lost in the processes of transition. From the stability of a new matrix, the child can interact with the old ones in new ways that are far more creative and flexible. The increased physical prowess that supports each matrix shift prepares the child for new learning. The child's internal "push" precedes his ability to actually "do" something; Nature is always preparing for the next stage.

According to Pearce, Nature programs every conceivable safeguard into the biological plan, but unfortunately it is highly vulnerable to disaster. Because its "programming" can only be built in as "intent" (a drive from within), the success of the plan is dependent on the child's being supplied with the proper "content" (provided from without--the environment). It is here that as mentors we can best serve the biological plan by providing for the interconnections to take place that are necessary to the particular stage in the child's development. It is our responsibility, for instance, to see to it that the bonding to each matrix occurs, beginning in utero (mother as mentor), and that the opportunities for experience and interaction occurs for movement to subsequent matrices.

The implications of what Joseph Chilton Pearce and Jean Piaget have to say regarding the bringing-up of children are a profound challenge to the practices currently in place in our

society--practices which unknowingly thwart and destroy the potentials for the maturation of our humanness. I will deal with these issues within the context of the suggestions in the last chapter of this book. This sequence of ideas, however, must include the work of a human ecologist who has even more closely linked our humanness to the natural world and provides some keen and insightful perception into the sources of our ecological milieu.

The Child in Nature

In Nature and Madness, Paul Shepard has taken a course analogous to what is sometimes used to discover the roots of mental illness, that being to address the person's infancy. Calling the irrational destructiveness to our environment a form of "societal psychosis," Shepard has made the hypothesis that this "madness" stems from our societal practices of child rearing. By comparing Pearce's biological plan, among others, to the present ways in which children are brought up in our society, Shepard has identified what he believes to be the cause of our ecological crisis.

Beginning with ancient hunter-gathers and proceeding to early agriculturists, desert dwellers, and into the times of the scientific and industrial revolutions, Shepard has followed a sequence of child-rearing traditions that has progressively reduced children's opportunities to experience Nature as the societies themselves grew away from the Land. For example, the tribal child was continually immersed in the life of the Land, individual and tribal indentity was tied to places, and juvenile bonding to the terrain attained a

"supersignificance" for the rest of the child's life as compared to the duality of the village, where tame vs. wild, crops vs. weeds, useful vs. worthless, formed the emerging structure of societal separateness. According to Shepard's "psychohistory," village children were often given the most menial of tasks as the proportion of time spent in labor increased rapidly as crops and trade items for the marketplace replaced subsistence hunting and gathering. As a result, children were increasingly denied the experiences that are necessary to form bonds with the Earth-matrix.

Part of the story resides in the history of agriculture and the ways in which it has directed our attitudes toward Nature. "One of its great themes is mastery, and to fantasies of omnipotence[5] which are generated in the ways in which children are reared, especially when those ways fail the needs of the child (Shepard 1982)." I would like to suggest that this might be the cause of much of children's unnatural cruelty to other life forms, as they attempt to exercise their mastery over Nature as demonstrated to them in so many ways by the society. This also helps to answer a paradox that troubled me during the times I spent teaching in small, rural areas where most of the kids lived on farms and ranches. It seemed to me that they should have had more respect for the Land because of their proximity to it. But instead they were, for the most part, influenced by the exploitive practices of their parents and neighbors and were generally mindless of any wrong-doing concerning their destructive relationships with the creatures around them.

The pinnacle of this separateness occurs in modern cities,

according to Shepard, where children move directly from mother to social relations. What is absent is eight to ten years of indulging in interaction with Nature. The Earth-matrix never forms.

Shepard maintains that the "character of a culture both creates and is created by the experiences of children." His call for the return of our society's health in relationships to the Earth through a reappraisal of our child-rearing practices summarizes what we have lost and speaks to us as mentors. Indeed, the realization of the usefulness of the concept of mentorship and some important keys to the formation of mentorship responsibilities are to be found in the following quote:

> "Beneath the veneer of civilization lies not the barbarian and animal, but the human in us who knows the rightness of birth in gentle surroundings, the necessity of a rich non-human environment, play at being animals, the discipline of natural history, juvenile tasks with simple tools, the expressive arts of receiving food as a spiritual gift rather that as a product, the cultivation of metaphorical significance of natural phenomena of all kinds, clan membership and small group life, and the profound claims and liberation of ritual initiation and subsequent stages of adult mentorship. There is a secret person undamaged in every individual, aware of the validity of these, sensitive to their right moments in our lives. We have not lost, and cannot lose, the genuine impulse. It awaits only an authentic expression (Shepard 1982)."

Conclusion

Children are tied to Nature as much for their intellectual and spiritual growth as they are to the Land for their physical nourishment. From the dynamic interactions needed to form the mental assemblages, to the safe places from which to reach out, to the teachings held in leaf and tree, stone and earth, insect and bird, we

are as affected by Nature as it is by us. What is often lacking is a harmony in these sharings born out of respect for our collective vulnerabilities.

"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."

Aldo Leopold

Chapter Four

The Depth of Deep Ecology

One of the major themes that permeates this writing is that, as mentors, we ought to encourage the development of an ethical relationship to the Land. The above quote, based on a philosophy developed in the late 1930's and '40's by a wildlife biologist turned ecologist-philosopher, is a classic statement of what is meant by a land ethic; indeed it is the central tenet of the land ethic, and has served to support a growing philosophical movement in this country and elsewhere, that has been given the name deep ecology. The purpose of this section is straightforward: to present the background and principles of deep ecology in the context of contemporary environmentalism.

Before looking into the "depths," perhaps we should explore for a moment or two, what the term "environmentalism" has come to mean in our society; what has been accomplished, and what has not been accomplished.

The Shallow Ecology Movement

Since the early seventies the social phenomenon called the "environmental movement" has become a household word. Brought about by the new understandings of our world provided through the emerging science of ecology, and the growing realization among a certain

segment of the population that the quality of our surroundings needed protection as well as some cleaning-up, what has been called "reform environmentalism" organized itself to address the problems brought on by economic growth and the increased standard of living of post-World War II America.

According to Bill Devall, "...several reformist environmental movements have been active during the last century." He goes on to list them:

> (1) "the movement to establish urban parks, designated wilderness areas, and national parks, (2) the movement to mitigate the health and public safety hazards created by the technology which was applied to create the so-called industrial revolution (3) the movement to develop "proper" land-use planning, (4) the resources conservation and development movement symbolized by the philosophy of multiple use...of the U.S. Forest Service, (5) the "back to the land" movement, (6) the concern with exponential growth of human population and formation of such groups as Zero Population Growth, (7) the "humane" and "animal liberation" movement directed at changing the attitudes and behavior of humans towards some other aspects of animals, and (8) the "limits to growth" movement which emphasizes we should control human population and move towards a "steady state" or "conserver society" as rapidly as possible (Devall 1980)."

Alan Drengson has added a description of the shallow ecology movement that characterizes the essential features, which are: "...its mild reformist character and its anthropocentric bias that the nonhuman world has only instrumental value. The shallow ecology movement is essentially oriented toward the health and well-being of the peoples of the advanced industrial nations."

Although the tone of these statements is somewhat critical of "reformist environmentalism," I believe we should be more respectful of what these folks have been able to accomplish. After all, we would be in a lot worse shape if it weren't for the many dedicated

individuals and groups who have fought countless battles against some awesome adversaries. And how about the educational impact of their actions? "Ecology" and "pollution," "environment" and "environmentalists" didn't become part of the language of our society (even if spoken with a grimace) because people turned their backs on the problems. Granted, we are all part of the problem (to varying degrees, however), but only a relatively few have had the fortitude (guts) to oppose the formerly unopposable, and beat them at their own game.

The manner in which we should proceed is to build upon the environmental reforms and ecological "consciousness-raising" contributions of the so-called shallow ecology movement to further the aims of deep ecology. Some ecophilosophers, including Devall, have critized the reformists for having done more harm than good, but I don't agree.[6] Sure some of their efforts have been short-term solutions, but waiting for philosophical movements to be translated into action is not always consistent with the urgency of the situation.

In response to the need for long-term, stable changes in the fabric of society, deep ecologists have offered principles of a new paradigm (see note #3) that address the unifying idea of "person-in-nature" and call for a shift from the present "technocratic" paradigm to a new philosophy based on a transformation of values and social organization. Before we go into these, however, I think it would be useful to identify the philosophical roots of the deep ecology movement in order to recognize the contemporary synthesis

that is deep ecology.

Sources of Deep Ecology

Devall has provided us with a succinct description of the major premises of deep ecology: "The person is not above or outside of nature. The person is part of creation on-going. The person cares for and about nature, loves and lives with nonhuman nature, is a person in the 'earth household' and 'lets being be,' lets nonhuman nature follow separate evolutionary destinies."

Devall has also put together a brief summary of the sources of the deep ecology movement which provides a background for the compilation of principles that will follow. The sources are:

1) an influx of Eastern spiritual traditions into the West that carried along a different view of the man/nature relationship influenced by Zen and Taoist religious concepts;

2) a re-evaluation of Native American religion, philosophy, and social organizations that substitutes for a popular Romantic view of "noble savages" one which is more objective, analytical, and comparative;

3) a "minority tradition" of Western religious and philosophical traditions followed through ancient Greeks, St. Francis, Spinoza, Thoreau, John Muir, Santayana, Robinson Jeffers, Aldo Leopold, Loren Eisely, Gary Synder, Paul Shepard, Arne Naess ("father" of deep ecology), Edward Abbey, and others;

4) the scientific discipline of ecology selectively perceived as contributing to a world-view, and not the body of information having

the potential of being used for the purposes of "managing" Nature. For Paul Shepard, "the ideological status of ecology is that of a resistance movement." This is how ecology has come to be known as "the subversive science"; it challenges the major premises of the dominant social paradigm;

5) the "artists who have tried to maintain a sense of place in their work," such as Ansel Adams, Morris Graves, and Larry Gray.

Arne Naess, the Norwegian originator of the term "deep ecology," has continued to develop this philosophy and remains one of its key spokespersons. He distinguishes between the basic principles (which he calls the "platform") of deep ecology and the fundamental features of religions and philosophies from which the platform is derived:

> "The basic principles within the deep ecology movement are grounded in religion or philosophy. In a loose sense, it may be said to be derived from the fundamentals. Because these are different, the situation only reminds us that very similar or even identical conclusions may be drawn from divergent premises. The principles (or platform) are the same, the fundamental premises differ.
>
> In order to clarify the discussion one must avoid looking for one definite philosophy or religion among the supporters of the deep ecological movement. Fortunately there is a rich manifold of fundamental views compatible with the deep ecology principles. Furthermore, there is a manifold of kinds of consequences derived from the principles (Naess, 1984)."

Basic Principles of Deep Ecology

Since its birth in the early seventies, there have been several compilations of the fundamental tenets of deep ecology. The most recent was formulated in the spring of 1984 by Naess and fellow deep ecologist George Sessions and represents the current state in the evolution of the philosophy of deep ecology. What follows are the

basic principles they have developed plus comments for each:

(1) The well-being and flourishing of human and non-human Life on Earth have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the non-human world for human purposes.
(2) Richness and diversity of life forms contribute to the realization of these values and are also values in themselves.
(3) Humans have no right to reduce this richness and diversity except to satisfy vital needs.
(4) The flourishing of human life and cultures is compatible with a substantial decrease of the human population. The flourishing of non-human life requires such a decrease.
(5) Present human interference with the non-human world is excessive, and the situation is rapidly worsening.
(6) Policies must therefore be changed. These policies affect basic economic, technological, and ideological structures. The resulting state of affairs will be deeply different from the present.
(7) The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between big and great.
(8) Those who subscribe to the foregoing points have an obligation directly or indirectly to try to implement the necessary changes.

Comments on the Basic Principles:

RE (1). This formulation refers to the biosphere, or more accurately to the ecosphere as a whole. This includes individuals, species, populations, habitat, as well as human and non-human cultures. Our current knowledge of all-pervasive intimate relationships implies a fundamental deep concern and respect. Ecological processes on the planet should, on the whole, remain intact. "The world environment should remain 'natural' (Gary Synder)." The term "life" is used here in a more comprehensive non-technical way to refer also to what biologists classify as "non-living"; rivers (watersheds), landscapes, ecosystems. For supporters of deep ecology, slogans such as "let the river live" illustrate this broader usage so common in most cultures.

RE (2). More technically, this is a formulation concerning diversity and complexity. From an ecological standpoint, complexity and symbiosis are conditions for maximizing diversity. So-called simple, lower, or primitive species of plants and animals contribute essentially to richness and diversity of life. They have value-in-themselves and are not merely steps toward the so-called higher or rational life forms. The second principle presupposes that life itself, as a process

over evolutionary time, implies an increase of diversity and richness. The refusal to acknowledge that some life forms have greater or lesser intrinsic value than others (see points 1 and 2) runs counter to the formulations of some ecological philosophers and New Age writers. Complexity, as referred to here, is different from complication. Urban life may be more complicated than life in a natural setting without being more complex in the sense of multi-faceted quality.

RE (3). The term "vital need" is left deliberately vague to allow for considerable latitude in judgment. Differences in climate and related factors, together with differences in the structures of societies as they now exist, need to be considered (for some Eskimos, snowmobiles are necessary today to satisfy vital needs). People in the materially richest countries cannot be expected to reduce their excessive interference with the non-human world to moderate level overnight. The stabilization and reduction of the human population will take time. Interim strategies need to be developed. But this in no way excuses the present complacency -- the extreme seriousness of our current situation must first be realized. But the longer we wait the more drastic will be the measures needed. Until deep changes are made, substantial decreases in richness and diversity are liable to occur: the rate of extinction of species will be ten to one hundred times greater than any other period of earth history.

RE (5). This formulation is mild. For a realistic assessment of the situation, see the unabbreviated version of the I.U.C.N.'s World Conservation Strategy. There are other works to be highly recommended such as Gerald Barney's Global 2000 Report to the President of the United States. The slogan of "noninterference" does not imply that humans should not modify some ecosystems as do other species. Humans have modified the earth and will probably continue to do so. At issue is the nature and extent of such interference. The fight to preserve and extend areas of wilderness or near-wilderness should continue and should focus on the general ecological functions of these areas (one such function: large wilderness areas are required in the biosphere to allow for continued evolutionary speciation of animals and plants). Most present designated wilderness areas and game preserves are not large enough to allow for such speciation.

RE (6). Economic growth as conceived and implemented today by the industrial states is incompatible with (1) - (5). There is only a faint resemblance between ideal sustainable forms of economic growth and present policies of the industrial societies. And "sustainable" still means "sustainable in

relation to humans." Present ideology tends to value things because they are scarce and because they have a commodity value. There is prestige in vast consumption and waste (to mention only several relevant factors). Whereas "self-determination," "local community," and "think globally, act locally," will remain key terms in the ecology of human societies, nevertheless the implementation of deep changes requires increasingly global action -- action across borders. Governments in Third World countries (with the exception of Costa Rica and a few others) are uninterested in deep ecological issues. When the governments of industrial societies try to promote ecological measures through Third World governments, then practically nothing is accomplished (e.g. with problems of desertification). Given this situation, support for global action through non-governmental international organizations becomes increasingly important. Many of these organizations are able to act globally "from grassroots to grassroots" thus avoiding negative governmental interference. Cultural diversity today requires advanced technology, that is, techniques that advance the basic goals of each culture. So-called soft, intermediate, and alternative technologies are steps in this direction.

RE (7). Some economists criticize the term "quality of life" because it is supposed to be vague. But on closer inspection, what they consider to be vague is actually the non-quantitative nature of the term. One cannot quantify adequately what is important for the quality of life as discussed here, and there is no need to do so.

RE (8). There is ample room for different opinions about priorities: what should be done first, what next? What is most urgent? What is clearly necessary as opposed to what is highly desirable but not absolutely pressing?

(Naess and Sessions 1984)

Bill Devall has also proposed a list of "basic principles" that follows, for the most part, those of Sessions and Naess. There are, however, several that I find specifically appropriate to the subject of this book:

1) "A new philosophical anthropology will draw on data of hunting/gathering societies for principles of healthy, ecologically viable societies (this is one of Paul Shepard's main arguments--is it

not?). Industrial society is not the end toward which all societies should aim or try to aim."

2) "Education should have as its goal encouraging the spiritual development and personhood development of the members of a community, not just training them in occupations appropriate for oligarchic (the power rests with only a few) bureaucracies and for consumerism in advanced industrial societies."

3) "More leisure as contemplation in art, dance, music, and physical skills will return play to its place as the nursery of individual fulfillment and cultural achievement (Devall, 1980)."

Deep ecology, then, hosts both a varied and broad philosophical and religious base, as well as a set of fundamental principles that challenge virtually every premise upon which the technological, dominant paradigm rests. Our task as mentors is to consider critically what deep ecology has to contribute to a future of harmony between humankind and the Earth. I believe that it has much to offer, but that the societal expression of that which is ultimately gleaned from this body of thought is directly related to our success as mentors. As I have said and will continue to say, children who are allowed to mature, who are nurtured in their growth as human beings, are the individuals that will be equipped intellectually and intuitively to make the personal decisions that will support the movement of our society to a new balance with the spirit of the Earth. "Where there is no vision, the people perish (Proverbs 29:18)."

Chapter Five

The Worth of Values

It isn't difficult to understand why Aldo Leopold decided that what was needed in the human/Nature relationship was a new ethic, a benchmark whereby we could decide the proper course of action. His offering of a land ethic was not made because there wasn't one around, however. No, it was offered because the ethic that was in place gave free rein to all sorts of exploitive and ecologically dangerous practices. The difference between Leopold's land ethic and what is usually called the Judeo-Christian ethic, is the foundation of values upon which each is erected. Where the Judeo-Christian ethic, as commonly interpreted, places the value emphasis on the needs and wants of "man," the land ethic recognizes man as "plain citizen" of the Earth and ascribes equal value to all parts of the biotic community, be it human, animal, plant, or stone. The important point in this example is that the perceived rightness or wrongness of our actions is the direct result of whether or not, or to what degree, we ascribe value to the factors involved in the decision.

It seems to me, then, that if we wish to encourage an ethical relationship to the Land we must address the value structure that undergirds the ethic. Values applied to non-humans would be a good beginning in the formation of a person-in-nature environmental ethic, but two questions arise: 1) how do we go about encouraging the development of these kinds of values and 2) as mentors, do we have the right to "push" our values (regardless of what they are) onto our

young charges?

Theories of Moral Development

Early in his career, Piaget studied moral development in conjunction with his work on egocentric thought. His original work focused on children's practice and consciousness of rules as a function of their age and intellectual development. He found that children less than two years old have no sense of rules; their play was purely motor activity. Any appearance of rule following was merely physical repetition. Between the ages of two and six, rules are followed through imitation of others. He called these children morally heteronomous, because the rules they adhered to had external sources. These children understood that there are rules that should be obeyed, but they are applied only through imitation.

By ages seven to ten, children understand that rules are important ways to regulate social interaction. They are still morally heteronomous, but there is an emerging autonomy. Around ages ten or eleven, Piaget found that autonomy takes precedence over heteronomy in the child's understanding of rules. He observed that rules between playmates were matters of mutual consent, and were not cut and dried "laws" as presented by authority.

Piaget provided commonplace examples of children's moral autonomy or heteronomy by asking children between the ages of six and fourteen whether it was worse to tell a lie to another child or to an adult. The younger, morally heteronomous children were consistent in their reply that it is worse to lie to an adult. When asked why, the common

response was that adults are better at telling when a statement is not true. The older children, however, considered lying to another child to be worse because lying to adults is almost unavoidable, but it is "rotten" to lie to other kids. These older children demonstrate a growing sense of autonomy, for them lies are bad regardless of the reward system involved. Piaget explained this shift as revealing a new set of mental structures; in other words, children construct their values from within based (again) on interaction with their environment.

His suggestion for encouraging moral autonomy was for adults to refrain from using rewards and punishments, which only serve to reinforce heteronomy. Instead they should stimulate the growth of autonomy by exchanging points of view with the child in order to draw them out of their ego-centeredness, and to assist them in constructing moral values for themselves.

Piaget's work on moral development resides mainly with the foundation of his studies on intellectual development which emphasize the child's surroundings as the source of experience leading to the child's ability "to construct from within."

My discomfort with the separation of moral and intellectual development is abated somewhat by connecting these two "components" as I have done for Piaget's work. Studies conducted to extend and clarify these ideas also serve to bridge this categorization, which seems to be more the result of scientific reductionism than it is of an actual separateness. Looking at the parts can only by legitimized when carried out in the context of the whole; otherwise the pieces

remain disarticulated, and virtually useless to any consideration that is other than myopic.

In the early and mid-seventies Lawrence Kohlberg presented his theory of moral development based on the groundwork of Piaget, but extended his treatment well beyond adolescents. Numerous studies conducted in this country and abroad further substantiated Piaget's belief that moral development is hierarchichal in nature, proceeding through a series of stages. More for the purposes of further discussion than for their specific relevance to our stated objectives, I am including a brief summary of Kohlberg's conclusions:

Stage	Motivation
Stage one: Avoiding Punishment	Ethical decisions are made to avoid punishment. Self-gratification is important. Morality occurs because of fear of punishment.
Stage two: Seeking Rewards	Desire for personal reward and benefit. What is in it for me? What are the consequences?
Stage three: Social Approval	Anticipation of social disapproval or self-guilt. Has stereotypes of good and bad people.
Stage four: Law and order	Anticipation of dishonor. Follows social rules. Exceptions cannot be made because everyone would start disobeying rules.

Stage five: Social Contract — Concern about self-respect or being irrational or inconsistent. Right actions are constitutionally and democratically derived. It is the way the American government operates (ideally).

Stage six: Universal Ethics — Concern about condemnation, about violating a person's principles, and about maintaining principles as a way of life. Sacredness of life, compassion for fellow humans, universal principle of justice.

(Bybee and Sund 1982)

The main objection that I have with Kohlberg's assumptions is that their usefulness to us is very limited due to their absolute anthropocentrism. The principles outlined by Kohlberg are directed only to social relationships among humans. Besides, are we to believe that a universal ethic that is really "universal" could be applied to concern for animals, for example, as a result of upward movement through a heirarchy of stages related to social motivation alone?

This is not to say that the principles contained in these stages are irrelevant to the relationships between people and the Earth. The problem is that they are, in most cases, the sole determinant of the rightness or wrongness of our actions in relation to the Land, especially stages four and five. But one of the main reasons for

advocating a land ethic is the inability of "rules" to protect the natural environment from our misuse. Laws can help, but the opportunity to disregard them is most often not offset by the opportunity to enforce them. Moral philosopher Peter Hutt has said, "Regulation is a substitute for morality. When the law needs to be appealed to, it's a sign that the working order of society is breaking down (Koostra, 1984)."

So it appears that we are left with the problem of discovering the means whereby we can arrive at a universal ethic that is truly universal. I believe the key to this can be found in what Piaget had to say about encouraging moral autonomy. If you recall, he suggested avoiding rewards and punishments and instead exchanging points of view. Voila! Couldn't we exchange points of view with the other citizens of the planet? Perhaps a means of valuing them could arise from seeing their side of it all.

Morals and ethics are dependent on the values that support them. If we would like children to have the opportunity to value Nature, we must give them the oppportunity to experience it, to interact with Nature in the process of constructing values from within.

I find "value" in the theories of Piaget and Kohlberg--as descriptions of children's progress in thinking. However, I am somewhat puzzled about their relevance to environmental mentorship's goal of promoting a land ethic. Therefore, I am here, presenting my theory (hypothesis really) of Environmental Ethics Development.

Light's Levels of Environmental Ethics Development

Level one: Avoidance of injury or discomfort--Good and bad based on physical consequences (e.g. poison ivy, bad taste, fall down-go boom)

Level two: Seeking rewards--Contact with Nature provides play opportunities, a cool stream on a hot day, wild edibles.

Level three: Seeking approval of Nature's inhabitants--not frightening them or hurting them--feeling a part of it all.

Level four: Discovering and abiding by the laws of Nature, the truths of ecology, and the wisdom of natural history.

Level five: Nature/human community -- reciprocal commitment to harmonious interactions--mutual respect for shared vulnerabilities and constraints of time and space.

Level six: A "real" universal ethic--all components of Nature have equal intrinsic value and the right to fulfill their place in the natural scheme of things--Sacredness of all.

These were derived by taking Kohlberg's stages and substituting interactions with Nature for social interactions. At this point I am unconvinced of the absolute validity of this hypothesis, yet I do believe that it follows a system whereby the value of Nature is increased proportionately with both intellectual development and experiential interaction. It does have some grounding in personal observations of my son, who seems to have passed stage one and is now in stage two. He appears to be making progress toward stage three, but attempts to encourage him in the direction of the discoveries of stage four have been relatively unsuccessful, although I'm not sure whether he really doesn't understand or just doesn't have the language yet (he does understand erosion though).

Another recently recognized theory of moral development has been offered by Carol Gilligan, a colleague and co-author with Kohlberg,

who has proceeded from their earlier conclusions to a new understanding of moral development based on the differences between value systems of the two sexes. According to Gilligan's studies, men in our culture

> "tend to see the world in terms of autonomy (and are overthreatened by intimacy), whereas women tend to see the world in terms of connectedness (and are overthreatened by isolation). (Her) work has created a new appreciation for a previously uncatalogued female sensitivity. Because we live in a world where our survival depends on our sense of connection, Gilligan's work has implications for a rather different kind of future--one in which humanity takes it cues not from Big Brother, but from sisters, mothers, and daughters (Van Gelder 1984)."

Besides being critical of Kohlberg's conclusions (she feels them to be centered on male norms alone), Gilligan has presented some new ideas regarding the differences in the way women and men deal with moral dilemmas.[7]

Gilligan found that women tend to view these dilemmas in terms of conflicting responsibilities; their responses often do not fit Kohlberg's stages. She identified three stages in the resolution of these conflicts, each one representing a more complex understanding of the relationship between self and other, which can be interpreted as increasing degrees of connectedness. The "highest" stage was based on a "principled understanding of non-violence as the most adequate guide to the just resolution of moral conflicts (Gilligan 1977)."

This orientation towards conflict resolution, the tendency to see connections, and a general pattern of wholistic thinking, appears to be very important to the health of our society; we need to encourage women and girls to express and share this outlook. Such attitudes and

values have too long been suppressed by a dominant principle that could benefit from the cultivation of the "feminine principle," if for no other reason that the seeking of new balances and integrations in a world where the predominance of a distorted machismo has led us to the edge of destruction.

In conclusion, I believe that children learn values the same way in which they build other components of their world view--by experiential interaction. The means whereby children ascribe value to the natural components and indeed to the Earth as a whole will occur naturally if children are encouraged to empathize with Nature, and to exercise their resultant autonomy.

As mentors we should be aware of our influence on children, especially young children, by both precept and example, and be sensitive to the opportunities to encourage the development of sound environmental values and moral autonomy. An environmental ethic supported and nourished by values naturally chosen through time spent with the Land should be a vital component of adults who must decide the fate of the Earth.

There Was A Child Went Forth

There was a child went forth every day,
And the first object he look'd upon, that object he became, And that object became part of him for the day or a certain part of the day,
Or for many years or stretching cycles of years.

Walt Whitman

Chapter Six

Mentorship for Connectedness

One purpose of this last section is to pull together, in summary fashion, the preceding ideas that form the philosophical groundwork of environmental mentorship. A second function is to address some of the aspects of a mentorship approach to environmental education that have so far been treated only in passing. I am referring specifically to statements made along the way about "spiritual development," and about "science," which deserves some treatment as a vehicle for interacting with the environment. The time I spent as a science teacher has given me a strong bias in favor of scientific inquiry as a valuable means of developing values for the natural world.

One of the concerns that I've had while thinking about this chapter regards the offering of suggestions. From the outset, my philosophy and orientation has been that the methodology of environmental mentorship is or should be self-generating. That is to say that once the mentor has a genuine feeling for his or her responsibilities, and is grounded in a flexible personal philosophy of learning as it applies to children and the Earth, the ways in which

the sharing occurs will be dependent on two factors: the relationship that exists between the mentor and the child or children, and the potentials present in the particular environment within which the sharing takes place. Therefore, the suggestions I make will be broad and directed toward increasing skills at taking cues from both the child and from the immediate environment, and not just suggestions for specific activities.

There will be times, however, when inspiration does need a boost, and getting started at something like this is sometimes difficult. For these reasons I will be directing you to a guidebook of Nature-awareness activities that is very well done. Joseph Bharat Cornell's, Sharing Nature with Children, contains a variety of great ideas for children of various ages that are grouped according to the right place and time for each activity. As a starting place they will do nicely, but more importantly they may help in the discovery of your own creative "games."

A most important means for translating the philosophy of environmental mentorship into appropriate applications concerns first recognizing and then sensitizing the approach used to the needs and abilities of the child. In order to provide us with the tools needed to do this, we have dealt with Piaget's stages, Kohlberg's, Gilligan's, Pearce's, and even my own. The point is that children do not grow in a smooth progression. Psychological, physical, and neurological data support the theory that Piaget presented before this information was available, i.e. that children mature in stages that are distinguishable from one another, and are dependent upon the

mental structuring accomplished in prior stages. The apparently smooth progression in growth is actually broken by periods of acceleration, where conceptual leaps to new ways of thinking occur.[8]

Something that perhaps should have been emphasized earlier concerns children being pulled biologically (or pushed purposefully) along to new stage-specific interactions without accomplishing the vital prerequisite tasks of the previous stage. According to Pearce and Shepard, early deprivation of matrix bonds and stimulating interactions results in severe harm to the biological plan and therefore stifles intellectual growth. Although I believe that the "hurried-child syndrome"[9] is a real and serious problem, and that the absence of maternal/parent and Earth bondings causes permanent harm, there is and should be ways to make up partially for such shortcomings. Many loving and sensitive parents and mentors, upon learning the truth about "modern, medical childbirth" and many of the other practices of child-rearing that they accepted as the "civilized" way, may be stricken with guilt upon realizing the hurt they have unknowingly inflicted upon their children. I believe that some of the harm can be mended through patience, kindness, and loving mentorship.[10] I also feel that as adults we may be able to recapture partially what was denied to us as children, but the possibility exists that we may never fully realize the full impact of such losses.

The child's experience and interaction with parts of the environment other than Nature alone are also important. These will be referred to as "human environments" meaning human-dominated environments as opposed to the non-human environment, meaning Nature.

The fact is that most children's environments are dominated by the activities of people. It is most important for the child to "structure a knowledge of the world exactly as it is (Pearce 1977)." My particular emphasis has been a response to the lack of opportunities for children to experience the natural world, yet interaction with the human-dominated world, especially under the auspices of an environmental mentor, is not to be de-emphasized. What is needed more that anything else are opportunities for children to interact with their surroundings, period.

What should be kept in mind is than an ethical relationship to the Land based on values gained through interaction with the Earth alone is of little value to attaining goals of societal change if its growth is not accompanied by interactive structuring of the society itself. The technological society is so complex, and so rapidly increasing in its complexity, that any diversion of its course will have to be a function of a well-structured knowledge of it. In order to accomplish the transformation to a new harmony, we must learn to take our cues from the Earth instead of from politicians, advertisers, and bureaucrats who are up to their eyebrows in the dominant, terminal paradigm. (See Appendix I for an itemization of its values.)

This chapter's next section uses the various levels of ethical maturation that were developed in the last chapter to form a backbone for organizing the many ideas that have been presented. These theories all follow Piaget's original idea of sequential developmental stages in intellectual growth; the ones appropriate to each stage have been collected and listed together. Although the specific number of

stages differs from theory to theory (Piaget had four, Pearce - five; Kohlberg and I - six), they cover the same general age spans, overlapping each other at different points. Keep in mind, however, that age ranges for each stage are not arbitary, nor are they precise. Individual children may not progress through stages at the same rates; the age-ranges given are meant to indicate approximate ages only.

The Evolution of a Land Ethic

My hypothesis is that ethical maturity in humankind's relationship to the Earth follows an hierarchical progression precisely as does the remainder of our whole-being growth. From the purposeful gropings of our infancy, to the mental restructuring of a metaphysics, we carry an almost unbelievable potential wrapped in the fabric of our intent. To follow these promptings, to allow the unfolding of a grand design, is to share with children their birthright as human beings. The synthesized heirarchy follows:

Level One - Avoidance of injury or discomfort-good and bad based on physical consequences (Age: birth to two years)

Ethical sequence - prerequisite interactions lead to first "rules" where avoidance is valued in its own right. For example, an infant/child learns that not watching one's step leads to skinned knees, and that "hot" is painful.

Piagetian stage - "sensori-motor" - infant/child explores environment through muscular interactions as directed by sensory information.

Biological plan - bonding to mother/parent matrix provides security for environmental interaction - first task is to structure knowledge

of the world as it is.

Shepard - birth in gentle surroundings - ample time and touching closeness for maternal bonding.

Human environment - child is allowed to interact freely with a minimum of "No!"'s - adult values are not superimposed - a child is encouraged to value without cultural restraints of utility or worth - "non-interactable" items are put away.

Natural environment - free interaction is allowed and encouraged - parents/mentors are responsible for child's survival/safety - small hurts will occur but are unavoidable, and in some cases necessary to mental structuring - pristine surroundings are less important for such small children; readily available, easily accessible areas such as backyards and playgrounds will do fine.

Science - although not in the classic sense, the legitimate scientific skills of observation and exploration are being developed. Sand, mud, and water play should be encouraged - listening for new sounds (insects, rain splashes, wind through leaves, birds, squirrel's chatter) - testing resilience of meadow vs. sidewalk - smelling new cut grass, flowers, the river - finding small pebbles, shells, caterpillars.

Level Two - Seeking rewards - contact with Nature provides play opportunitites, a cool stream on a hot day, wild edibles, dancing with leaves. (Age: 2 to 7 years)

Ethical sequence - intitial values gained during this stage are dependent on personal gratification; however, continued contact leads

to growing empathy and identification with other aspects of Nature (plants, animals, etc.), as foundation for development of egalitarian principles.

Piagetian stage - "pre-operational" - absense of and growing ability to perform logical operations-thinking is episodic, "centers" on one feature at a time - ego-centeredness diminishes as child learns to see other points of view as vehicle for ascribing value.

Biological plan - anxiety-free interaction in context of maternal/parent and mentor bonds leads to Earth matrix shift at end of stage - the Earth becomes the "safe place to stand." If allowed to form, this bonding will serve throughout life as a vital, dynamic connection.

Shepard - fantasy play and play at being animals are encouraged as vital components of stage-specific mental structuring and further indentification with non-humans.

Human environment - interaction with society moves to greater spheres - children allowed to construct images of world as it is - mentorship supervision conducts a human and societal resources inventory of the available environment in order to identify sources of potentially valuable experiences: museums, parks, cemetaries, dumps, small "undeveloped" places - even a crack in the sidewalk can demostrate our immersion in Nature.

Natural environment - child is allowed and encouraged to explore the multitude of possibilities for play - mentor directs attention towards respect and empathy for Nature's inhabitants and serves as a guide for the seeking of rewards; the cool stream, soft grass, wild

strawberries, excitement, adventure etc. These form the child's first values for Nature (vital ethical pre-requisites).

Science - identification and collection of wild edibles encourages growth of observation and discrimination skills - inquiry is encouraged as opposed to relating facts (a mentor is more a sharer than a teacher) - the mentor is quick to focus the child's attention on differences between pebbles, pine cones, flowers, birds, leaves, grasses etc. Mentor honors questions with "let's find out" and finds ways of sharing joy in inquiry.

Nature activities - There are many wonderful activities for children in this age range in Cornell's book, Sharing Nature with Children - try "Heartbeat of a Tree," "Blind walk," "Meet a Tree," "Role Playing," "Micro-hike," and "Un-nature Trail" - interaction with Nature has the tone of joyful celebration.

Spirituality - Many children are exposed to the concept of death during this time, but lack the ability to deal with it. Discovery of a dead animal might be propitious for introducing the idea of death as nourishment for life. Burying it and planting seeds over the site (to be revisited later) is worth the time. It is difficult to offer more specific suggestions so I will leave most of this to you. My suggestion is to be aware that the abstract concepts of spirituality can have experiential analogues in Nature - keep an eye out for them. (An example could be the immortality of matter as it cycles through Nature in a process of continuous resurrection.) Children should be given the opportunity to identify with a special place, to be returned to often for comfort and guidance. It could be as large as a forest

or as small as a tree. The idea is to promote a "sense of place."

Level Three - Seeking approval of Nature's inhabitants - not frightening or hurting them - feeling a part of it all. (Age: 7 to 11 years)

Ethical sequence - Growing awareness of intrinsic value in Nature - accompaning development of self-concept lends itself to feelings of belonging.

Piagetian stage - "concrete operational" - children develop ability to perform true mental operations - but only in the context of physical interaction with "concrete" objects.

Biological plan - from Earth as matrix, child moves toward shift to "self in Nature" as matrix - child is helped to learn survival skills as movement to self-responsibility for well-being occurs.

Shepard - "play" as work with simple tools and natural materials - opportunities to respectfully use (vs. abuse) Nature - importance given to "rites of passage" which, in this case, refers to celebration of movement from childhood to adolescence.

Human environment - opportunities for interaction with society are expanded - children are allowed to visit sites of massive human-induced ecosystem disruption such as open-pit mines, clearcuts, pollution - fantasy and imitative play help to firm mental structures.

Natural environment - opportunities in quiet, relative solitude lend themselves to further identification and empathy with Nature's inhabitants (spend an afternoon in a forest as bears, racoons, frogs, etc.) - this is not to deny times of high-energy adventures and

challenging play - the "self in Nature" matrix allows for more creative and flexible interactions with the Earth matrix and are encouraged.

Science - interest in collectibles can lead to a more general interest in natural history - as a mentor you do not need to be qualified as a naturalist - sharing exciting discoveries can naturally lead to more advanced scientific inquiries by simply following the mysteries as they reveal themselves to you and your children - your responsiblity as a mentor is to provide access to the materials needed to pursue interests.

Nature activities - Cornell's book has several activities that either lend themselves to a quiet, respectful mood, or to adventure and excitement - try "Recipe for a Forest," "Scavenger Hunt," "Birds on a Stick," "Recon-hike," "Still Hunting," and "Night World."

Spirituality - a growing closeness to Nature, along with a surge in self-concept can provide opportunities for growth.

Level Four - Discovering and abiding by the laws of Nature, the truths of ecology, and the wisdom of natural history. (Age: 11 - 15 years)

Ethical sequence - the adolescent is capable of building upon the prior groundwork of values a more universal understanding of the balanced functioning of Nature - experiencing the laws of Nature can lead to being valued in their own right and followed out of respect.

Piagetian stage - movement from "concrete" to "formal operations" - increasing ability to deal with mental abstraction (such as the above

laws) in the absence of physical interaction.

Biological plan - from self in Nature, the shift is to self as Nature and reliance on personal strength for security.

Human environment - along with the identification of Nature's laws, experience with society leads to contradictions - a growing sense of oneness with Nature stands in sharp contrast to a society in conflict with Nature - facing such conflicting values can be an important means for clarifying and solidifying a developing value structure.

Natural environment - opportunities to explore in the context of increased structuring of wholistic concepts of Nature, along with heightened consciousness - mentor is quick to point out evidence of changes as indicators of operating natural "laws."

Science - a new and broader understanding of Nature as a system of interrelated parts - the science of ecology as supported by background in natural history provides a pathway to the discovery of the principles under which Nature operates - the concepts of community, ecosystem, and biosphere lead to an expanded awareness of Nature - look for patterns, variety and similarity, continuity and change - instead of examining differences, look for aspects of uniqueness in context of systems.

Nature activities - Cornell's "Silent Sharing Walk," "Survival Hike," and "Calling Predators" (backpacking, mountaineering, canoeing).

Spirituality - major opportunites for spiritual growth are present through increased familiarity with abstracts, as well as concepts of order and increased feelings of connectedness.

Level Five - Nature/Human "contract"[11] - reciprocal commitment to harmonious interactions - mutual respect for shared vulnerabilities and contraints of space and time. (Age: 15 and up)

Ethical sequence - value ascribed to the natural world is translated into maturing commitment to seek harmonious balances with Nature.

Piagetian stage - "Formal operations" - ability to deal directly with abstractions in the absence of physical interaction.

Biological plan - matrix shift from personal power to "pure thought"; endless possibilites for new mental structures.

Human environment - interaction with the technological society will be directed toward finding solutions based on commitment to seek a new harmony in human/Nature relationships (visit an organic farm - do some organic gardening on your own - do something together with alternative energy - go to public hearings; discuss the testimony).

Natural environment - used as a continual source of insight and inspiration in attempts to develop harmonious relationships to the Land - interactions in context of community.

Science - skills and understandings gained through interactive inquiry will serve in good stead when applied to the solution of many problems - mentor encourages advanced studies along lines of interest.

Spirituality - spiritual connectedness to the Earth is a natural result of quiet time spent in contact with the spiritual life of the Land and is a primary motivating factor for finding a new harmony with Nature - developing spiritual/ethical complex - suggest a survival hike or better yet, a vision quest.

Level Six - A "real" universal ethic - all components of Nature have equal intrinsic value and the right to fulfill their place in the natural scheme of things - sacredness of all.

Ethical sequence - an ethical relationship to the Land based on a values structure resulting from whole-person interaction with Nature in conjunction with an appreciation, understanding, and value for qualities that represent the highest potential of our humanness.

Human environment - the technological society is recognized for what it is; and that which blossoms despite its influence is carried forth as art.

Natural environment - Nature remains what it has been all along, a teacher - a mentor in the truest sense - sensitive to the right moment, the right place to reveal its wonder in unexpected and uplifting ways - it remains a source of personal peace and spiritual strength - a place that feels like home.

Science - retains its integrity as a means to explore, instead of its contortion as a means to explain in service to the machine.

Spirituality - Whether Nature is seen as creation, or as God, or as the evolution of cosmic dust, it remains a breathtaking glimpse of that which is much greater than humankind alone, but to which humankind belongs, physically - by the exchange of our bodies through the medium of the soil; mentally - through the growth of our intellect in partnership with the Land; and spiritually - in the shared consciousness of the other species of life on the Earth as well as the spirits of stone and sea, river and mountain.

"The Earth and I are of one mind."

Hin-mah-too-yah-lat-kekht - Thunder Traveling to Loftier Mountain Heights (also known as Chief Joseph)

Conclusion

In The Sense of Wonder, Rachel Carson has written:

> "A child's world is fresh and new and beautiful, full of wonder and excitement. It is our misfortune that for most of us that clear-eyed vision, that true instinct for what is beautiful and awe-inspiring, is dimmed and even lost before we reach adulthood. If I had influence with the good fairy who is supposed to preside over the christening of all children, I should ask that her gift to each child in the world be a sense of wonder so indestructable that it would last throughout life as an unfailing antidote against the boredom and disenchantments of later years - the sterile preoccupation with things that are artificial, the alienation from the sources of our strength."

My message is this: children must be allowed to grow with the Earth. They must be granted the opportunity to experience the richness and life in all things. The future of this planet must be entrusted to those deserving of its trust - children who have been gently and lovingly nourished in their growth, who have been nurtured in their maturation as human beings in Earth's household.

Be you parent, family member, scout leader, campfire leader, Big Brother, Big Sister, youth leader, teacher, or any adult who shares time with children, I urge you to fulfill your responsibilities as mentors! Your children will not only experience a great and wonderful gift, but you also will see through clear young eyes a vision of hope, life, and profound beauty.

NOTES

[1]I've used the term "ecology" in the title of this section because an analysis of environmental education in this country provides a perfect example of biologist-philosopher Barry Commoner's statement that "everything is connected to everything else," which just happens to be a basic principle of the science of ecology.

As a metaphor, the term ecology has not only been somewhat overused, it has often been used incorrectly. "Ecology" is not a place, nor is it a property of the environment. You can't mess up the "ecology" of a place anymore than you could destroy its geology or biology. What ecology <u>is</u> is the study of the interrelationships in an environment between its living and non-living members. If you were to destroy the "ecology" of a place, that would mean that you were interfering with someone's studies.

[2]A person who deals with the philosophy of ecology.

[3]"A paradigm is a shorthand description of a world view, the collection of beliefs, habits, and norms which form the frame of reference of a collectivity of people--those who share a nation, a religion, or a social class. According to one writer, a dominant social paradigm is 'the mental image of social reality that guides expectations in a society.' (Devall 1980)"

[4]This is the title of the recent report by the National Commission on Excellence in Education that has so greatly impacted the educational establishment. Its emphasis on academic achievement and

college "success" sharply criticizes the public schools for "a rising tide of mediocrity." It defines as a goal of education the development of a "mature and informed judgement needed to secure gainful employment, so as to manage one's life and the progress of society." Not only are the public schools incapable of promoting real maturity, but the profuse immaturity that is promulgated serves well both the duality of meaningless employment and frivolous consumerism, and the "progress" of societal degeneration.

[5]A belief in being all-powerful and indestructable.

[6]"Treating the symptoms of man/nature conflict, such as air or water pollution, may divert attention from more important issues and thus be counter-productive to 'solving' the problems (Devall 1980)."

[7]A technique developed by Kohlberg to assess moral development, consisting of presenting an experimental subject with a choice between two equally undesirable alternatives.

[8]Of course, Pearce relates these to "matrix shifts," where the child's growing autonomy draws him or her to increasingly greater spheres of connectedness. This may seem a contradiction, but it is the security afforded by the matrix that allows interchange with the child's environment to be free of anxiety, which is, according to Pearce, learning's greatest enemy (and the greatest lever of coercion-based education).

[9]David Elkind has written a most important book on this subject, The Hurried Child: Growing up Too Fast Too Soon.

[10]Recently there has been growing attention to the need for maternal and also paternal bonding, yet there has been no accompaning interest in seeing that children are allowed to bond with the Earth.

[11]REVOLUTION IN THE REVOLUTION IN THE REVOLUTION

The Country surrounds the city
The back country surrounds the country

"From the masses to the masses" the most
Revolutionary consciousness is to be found
Among the most ruthlessly exploited classes:
Animals, trees, water, air, grasses

We must pass through the stage of the
"Dictatorship of the Unconscious" before we can
Hope for the withering-away of the states
And finally arrive at true Communionism.

If the capitalists and imperialists
are the exploiters, the masses are the workers.
and the party
is the communist.

If civilization
is the exploiter, the masses is nature.
and the party
is the poets.

If the abstract rational intellect
is the exploiter, the masses is the unconscious.
and the party
is the yogins.

& POWER
comes out of the seed-syllables of mantras.

from Regarding Wave,
by Gary Snyder (1967)

Appendix I

Contrasting Paradigms in Environmental Education: A Summary

Item	Ideal	Dominant Paradigm
Nature	Living being	Resource storehouse (dead)
Balance	Cycles	Vectors
Approach	Wholistic/organismic	Mechanistic
Man + Nature	Man in Nature	Man vs. Nature
Science is...	Means to explore	Means to explain
"Promise" of technology	Disengagement, alienation (technology as separation from Nature)	Freedom from drudgery (technology as slave)
Unknowns	Sense of wonder	Agressive challenge
Environmentalism...	Challenges social paradigm	Reactionary, reformist
Identity	Participatory	Hierarchical
Roots of ecological crisis	Cultural	What crisis?
Childhood	Allowed to unfold naturally	Hurried to sub-adult, then frozen
Concept of self	Connected to whole	Egocentric, anthropocentric
Sensitivity to whole-person needs	Developed as high priority	Selective attention to societal priorities
Socialization	Age-diverse small group interaction	Large artifical peer society
Responsibility for children's education	Parents and/or/as mentors	Institutions

Mentor-child ratio	1:1,2,3	1:18 (School District 1, Missoula)
Goal of Env. Education	Moral and intellectual autonomy	Transmitting knowledge and values
Piority of Env. Ed.	Highest (survival)	Lowest (dispensable)
Supervision	Mentor	Teacher (didactic)
Technique	Interaction	Interpretation
Physical setting	Expansive, interactive	Contracted, isolated
Contact time outdoors	Frequent, intimate, experiential	Brief, rare
Time for env. education	Flexible, abundant	Rigid, restricted
Ed. technology	Person-involving	Thing-involving
Final objective	Whole-being maturity	Consumers, technicians
Achievement	Autonomy	Heteronomy
Connection to other disciplines	Interconnected, integrated	Isolated, reductionist
Spiritual development	Encouraged, nurtured	Purposefully ignored
Values	Connected to Earth	Connected to human society
Current value systems	Transformation	Transmission
Ethical maturity	Achieved	Thwarted
Values development	Directly addressed	Largely ignored
Ecology	Deep	Shallow

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