



The harmony seekers : ecologically cultivating land and learning
by Janet Amundsen Boyle

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University

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Abstract:

In a world where critical environmental issues of pollution and degradation of the land base exist, there is increased need for better understanding of and learning the ecology of life in order to promote the healing of these environmental wounds and sustain a healthy earth. Learning ecologically means grasping the concepts of the interrelatedness of all living organisms with each other and their surroundings. With this consciousness of the connectedness of life actively engaged, a harmony with the earth's systems is promoted in human actions. The purpose of this study was to describe the learning paths of individuals who have deliberately chosen to live with ecological consciousness. How they have overcome any educational and societal-imposed barriers to their ecological way of living and how they sustain that consciousness in everyday life are described.

A qualitative descriptive case study was utilized to discover and gain insight into the learning paths of ecologically conscious adults. Sixteen interviews were conducted with certified Organic Crop Improvement Association (OCIA) organic agricultural producers who by the nature of their organic production methods and practices are considered ecologically conscious. The study examined the learning paths of these ecologically conscious adults which included travels on established courses of learning such as that provided through formal educational systems and through their informal social and natural environments. Significant side trips involving reflective and critical thinking processes were often undertaken. Findings revealed learners best described as responsive, self-directed, and as those who think connectively.

Through this study, it can be concluded that among the individuals interviewed, the land is the context within which connective thinking reveals a value in health of land and family. These connective thinkers move on less traveled, more natural-ways-of-knowing paths as responsive learners whose learning processes have been shaped by self-directed actions. They continue to seek learning paths of empowerment and harmony of land and life. Recommendations from this study focus on actively promoting more earth education through exposure to and immersion in holistic, integrated, and multidisciplinary thinking processes related to an ecology of life.

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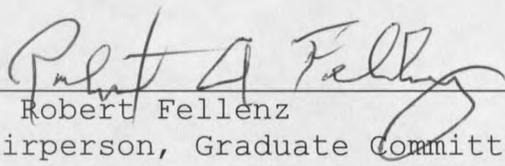
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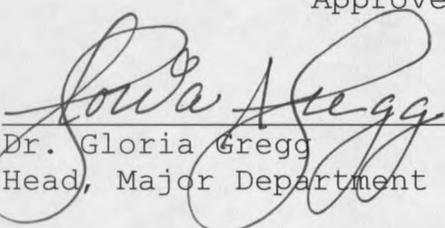
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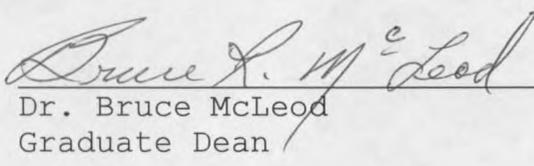
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ABSTRACT

In a world where critical environmental issues of pollution and degradation of the land base exist, there is increased need for better understanding of and learning the ecology of life in order to promote the healing of these environmental wounds and sustain a healthy earth. Learning ecologically means grasping the concepts of the interrelatedness of all living organisms with each other and their surroundings. With this consciousness of the connectedness of life actively engaged, a harmony with the earth's systems is promoted in human actions. The purpose of this study was to describe the learning paths of individuals who have deliberately chosen to live with ecological consciousness. How they have overcome any educational and societal-imposed barriers to their ecological way of living and how they sustain that consciousness in everyday life are described.

A qualitative descriptive case study was utilized to discover and gain insight into the learning paths of ecologically conscious adults. Sixteen interviews were conducted with certified Organic Crop Improvement Association (OCIA) organic agricultural producers who by the nature of their organic production methods and practices are considered ecologically conscious. The study examined the learning paths of these ecologically conscious adults which included travels on established courses of learning such as that provided through formal educational systems and through their informal social and natural environments. Significant side trips involving reflective and critical thinking processes were often undertaken. Findings revealed learners best described as responsive, self-directed, and as those who think connectively.

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CHAPTER 1

BEGINNING THE QUEST

Introduction

Modern natural history deals only incidentally with the identity of plants and animals, and only incidentally with their habits and behaviors. It deals principally with their relations to each other, their relation to the soil and water in which they grew, and their relations to the human beings who sing about my country but see little or nothing of its inner workings. This science of relationships is called ecology, but what we call it matters nothing. The question is, does the educated citizen know he is only a cog in an ecological mechanism? That if he will work with the mechanism his mental wealth and his material wealth can expand indefinitely? But that if he refuses to work with it, it will ultimately grind him to dust? If education does not teach us these things, then what is education for?

Aldo Leopold, A Sand County Almanac

Leopold (1949/1966) is symbolic of what today can be described as a challenge for rethinking the foundations of education. His Sand County Almanac laid the groundwork for an ecologically sound land ethic. He was a scientist and a philosopher who asked questions that no one else bothered to ask about the proper role of humans in nature. This led to the proposal of more radical ideas concerning one's citizenship in the natural order of things. He regarded "biological education as a means of building citizens" (p. 208). His philosophy of science went like this:

We are not scientists. We disqualify ourselves at the outset by professing loyalty to and affection for a thing: wildlife. A scientist in the old sense may have no loyalties except to abstractions, no affections except for his own kind The definitions of science written by, let us say, the National Academy, deal almost exclusively with the creation and exercise of power. But what about the creation and the exercise of wonder or respect for workmanship in nature? (cited in Flader & Callicott, 1991, p. 276)

Leopold had a deep concern about the aims of education. He contemplated that perhaps too much investment was being made in professional education, the emphasis being on preparing students to earn a salary rather than to embrace life. He speculated that a liberal education offered opportunities to all students to see, understand, and enjoy the ecology of life. He reflects:

One of the penalties of an ecological education is that one lives alone in a world of wounds. Much of the damage inflicted on land is quite invisible to laymen. An ecologist must either harden his shell and make believe that the consequences of science are none of his business, or he must be the doctor who sees the marks of death in a community that believes itself to be well and does not want to be told otherwise. (Leopold, 1949/1966, p. 197)

Environmental education can either teach about the environment or it can teach for the environment. Current educational methods and practices focus on learning about the environment rather than for the environment. Promoting awareness of connections between one's actions and the consequences of those on the surroundings and other living things is paramount to developing an ecological consciousness that supports a for the environment mentality. About the environment education infers a kind of detachment from the environment. Typical curricula are

data based and involve disconnected divisions, disciplines and sub-disciplines. Students are led to believe, for example, that politics is separate from ecology or that economics has nothing to do with physics (Orr, 1994, p. 23). However, the world is not this way. There is need to think in whole systems, find connections, and ask questions. Naturalist John Muir recognized this and eloquently said, "when we try to pick out anything by itself, we find it hitched to everything else in the universe" (cited in Miller, 1994, p 113).

Two recently published reports about American attitudes on consumption, materialism, and the environment provide results from a national public opinion survey commissioned by the Merck Family Fund. A large percentage of the respondents felt that too much focus is placed on getting what we want now and not enough on future generations; 88% believe that protecting the environment will require "major changes in the way we live" (cited in Taylor, 1995, p. 12). Indeed, Americans from all walks of life feel our system of living is seriously unbalanced, that our priorities are all out of order.

Current practices are intensifying the need in education for the environment. Business executives are more intent on profits than on building good communities. Students know more about growth economy than about the economy of nature. An educational system which responds to the demands of the capitalistic power structure continues to support a design with

aims and purposes of "equipping our nation with a first-class labor force . . . to compete more favorably in the global economy" (Orr, 1994, p. 26). One ecologist, Stan Rowe, states that the university has "shaped itself into an industrial ideal" (cited in Orr, 1994, p. 29), producing citizens with a consumptive mentality. Alisa Gravitz, Executive Director, Co-op America, believes that the way business is done in our global economic system is at the heart of the problem. She states,

It forces too many decent people--in business, public and private life--to put their efforts into the wrong priorities . . . increasing income instead of quality of life, improving profits instead of the environment, building power bases instead of healthy communities.
(p. 4)

David Orr (1995), professor of Environmental Studies at Oberlin College and author of Earth in Mind, says that:

Those who are now being educated will have to do what the present generation has been unwilling to do: stabilize world population . . . protect biological diversity, reverse the destruction of forests everywhere and conserve soils. (p. 43)

Therefore, education's challenge of the next century will be to educate people on how to use energy and materials with great efficiency and to rebuild economies in order to eliminate waste and pollution (p. 43). Rethinking curriculum and foundational principles of higher education as well as of adult education will need to be seriously considered.

It may be possible that individuals or communities who truly understand and appreciate the beauty and fragility of the natural environment may be driven to act upon that appreciation. Then

armed with diverse knowledge and experience, these individuals will continue to proactively support and implement environmental actions on their own and in their communities. The sciences are taught in our schools from elementary through higher education. Adult environmental education workshops and seminars are conducted within a scientific basis. If this education is effective, shouldn't there be cleaner water and air with the dissemination of this vital scientific knowledge? Despite today's educational approaches, society continues to conduct themselves within a "throw-away" mentality that further impacts our water, air and soils in overused landfills and groundwater contamination (Miller, 1994, p. 69). Is science to be challenged, and what of technology?

Orr (1994) suggests that "All education is environmental education" (p. 12). The goal of education "is not mastery of knowledge but mastery of self through knowledge" (p. 13). Fostering "ecological design intelligence" (p. 2) means meshing human purpose with larger patterns of the natural world, taking how nature works into ways people build and live. Education should "prepare people for lives and livelihoods suited to a planet with a biosphere that operates by laws of ecology and thermodynamics" (p. 12). Unfortunately, however, the American society still adheres to an educational system that is conventional in design and soul. A know-how institution ought to be a know-why institution and should eliminate knowing in

fragments, knowing without direction, and knowing without commitment (Orr, 1994, p. 29).

Environmentalism

Environmentalism is steeped in historic roots of nature protection. Two major cultural shifts launched the environmental activism movement--the Agricultural Revolution which began 10,000-12,000 years ago, and the Industrial Revolution which began about 275 years ago (Miller, 1994, p. 43). These economic and culturally-based revolutions have provided more energy and new technologies with which to alter and control more of the planet to meet basic human needs and to instill an attitude of increased want. By expanding food supplies and raising average living standards, each era increased the human population. The result has been soaring resource use, pollution, and environmental degradation.

The Native Way of Knowing Mother Earth

There is a long held sentiment that Indians were true people of nature. Indeed, early environmentalists stereotyped Indians as "the original conservationists." Certainly many environmentalistic writings make reference to the many inspirations of American Indian actions and attitudes which suggest reverence and respect for all life. Indian writers such as Vine Deloria Jr. and N. Scott Momaday have expressively written of nature relations as the center of American Indian

religions and lives. Their message speaks of loving references to the non-human world.

Historically speaking, before contact with white people, Indians depended upon their environment as the source of their life. They engaged in a relational subsistence with their environment. They defined themselves by the land and sacred places, recognizing a unity in their physical and spiritual worlds. It has been said "an ethical practical relationship to the environment is American Indian to the core" (Vecsey & Venables, 1980, p. 7). Nature and spirituality were connected. They were rooted in Indian culture. Perhaps it is this very rootedness in the environment that becomes the legacy of Indian environmentalism and the underpinnings of so many environmental philosophies evoking reverence and respect for Mother Earth. Clearly then Indians have something to offer that will improve mankind and the world if we would just learn from their example.

It is ironic to note that in contemporary years tribal development and land use have promoted a different view of Indians, one that is not so transcendent in describing Indian relations to the Earth. It relates to the need of modern Indian cultures to place need over cultural patterns which creates a "dilemma of synthesizing practical reality and idealism" (Vecsey & Venables, 1984, p. xxii). Even more interesting is the idea of how this relates to a rootlessness of white Americans in their approach to the environment. Evidence abounds that Americans and

their colonial ancestors "altered their natural surroundings and set in motion physical and biological processes that have had reverberating effects on the environment" (p. 46). Exploitation of nature took place as an anthropological response to the environment. Indeed, the term "natural resources" developed in the West in the 15th century, indicating a view of the environment as material to be exploited, existing only for its worth to humans (p. 33). It is particularly interesting to note the lack of "affectionism" that exists in literature of the New World:

The first Spanish to pass through the Grand Canyon made no comment about its beauty or unusual formations. Puritans for the first century wrote virtually no poetry describing nature. Instead, whites treated the land as a piece of property, something to be surveyed, parceled, bought, sold, argued over, stolen, and abandoned for land elsewhere. (p. 33)

Education and the Environment

Conventional and discipline-oriented education can contribute some understanding as to how the Earth operates, but it does little to connect us to the holistic nature of the environment; this is an equally important consideration. This means that we need to understand how environmental, economic, and social systems function and realize that environmental, economic, and social issues are inseparable. A major function of education should be to help citizens do these things.

In 1972 the United Nations Conference on the Human Environment recommended that every nation promote the development

of environmental education programs. The underpinnings of this recommendation lie in the idea that a proper role for education is the preparation of world problem solvers. For citizens to be able to effectively participate in decision-making processes, they must understand how environmental, economic, and social systems interact (Engleson & Yonkers, 1994, p. 10).

Perhaps the emphasis of education should be the recognition of the connectedness of systems of thinking, intellectual and emotional, whereby all things are not just valued for their uses, but valued because there is recognition of their symbolic, aesthetic, or cultural importance. A systems thinker embraces the web of relationships, knowing that humans evolve with the earth, and not on it. How often is the science student taught value thinking? Rachel Carson (1962) was a scientist who authored a book, Silent Spring, the results of which engendered an environmental movement that changed the course of history. In another work by Rachel Carson (1956), one that is less known but is revealing, nonetheless, she writes of a nature that inspires feelings of joy and wonder. She relates in The Sense of Wonder:

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 . . . I should ask that her gift to each child in the world be a sense of wonder so indestructible 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. (p. 43-44)

Adult Learning

What happens between childhood and adulthood that causes the diminution of Carson's "sense of wonder" in people, this kind of spiritual connection to the natural world? Are adults capable of learning, recapturing, this affective sense, traditionally characteristic of a child-like purity of heart?

J. R. Kidd (1973) has studied the affective domain of how adults learn. He suggests that feelings and emotions are found in any learning situation, that "the interests and motivations of any learner, child or adult, are primarily a matter of the emotions, not of the intellect" (p. 94). He emphasizes that feelings are "not just aids or inhibitors to learning" (p. 95), but that the goals of learning and of emotional development are identical in many ways and are realized in self-mastery.

Reflecting upon the influences that emotions--attitudes and motivations--play in learning, Kidd suggests that there are two burdens that adults carry as stigmas in their perceptions of learning. One stigma relates to a prevailing view that they are not efficient learners. The other stigma is an unpleasantness associated with learning during childhood (p. 95).

Contemporarily speaking, future adults may not have as many negative feelings about their schooling. However, many who grew up shaped by a highly pedagogical model of learning still carry feelings about their education that range from "mild dissatisfaction to hatred and loathing" (p. 96). Learning

associated with past failures and ill feelings tends to keep adults from engaging themselves. There is strong evidence to suggest a relationship between fear and anxiety and impaired learning (p. 99). One could speculate that the negative educational atmosphere in which some adults were raised as children has left some deep scars, impressions that have shaped unfavorable attitudes and behavior and which may interfere with their ability to undergo change that could beneficially lead to the realization of a self-actualized person.

According to Kidd, "change means disturbance, and a human being is ready to bear disturbance only under some conditions and not at all under others" (p. 97). Attitude change seems to occur when there is the acceptance of responsibility to oneself and to others. Optimistically, this notion could also be expanded to include acceptance of responsibility to the natural environment that sustains us.

Allen Tough (1978), an adult educator, alludes to the fact that a conventional focus in adult education emphasizes the providing of education or instruction and "professionally guided learning" (p. 253). Contrast this with an emerging focus--the facilitating of relevant learning where adults self-plan their own learning tasks ordinarily performed by an instructor of a course. Tough suggests that when adults engage in a learning activity on a self-directed basis, their own expectations provide

the primary guide to activity. Other people serve mainly as sources of encouragement and learning resources (p. 258).

Malcolm Knowles (1970), humanistic adult educator and critic of the usefulness of traditional theories of learning for adult education, proposed the development of a unique adult learning theory--andragogy, the art and science of helping adults learn. Premised upon a traditional conception that the purpose of education is the transmittal of knowledge and skills, he defines pedagogy as the art and science of teaching children. This well established pedagogical model of education might have deeply conditioned many adults such that they perceive the appropriate role of the learner to be one of dependence, a recipient of transmitted content. Is it possible that the entrenchment of this behavioristic and deterministic model has created adults who resist engaging in or are unable to engage in a humanistic learning process that promotes a self-concept for actualizing oneself in the natural environment?

Knowles' first assumption of andragogy addresses the concept of the adult learner, that of moving from being dependent in a learning setting to that of increased self-directedness. Evaluating psychologically the humanistic notion of self-concept, one is able to determine that it is not a negative concept of self-centeredness, but one that emphasizes one's responsibility to others (and perhaps to one's environment?). For humanists the self "is the heart of the person, the enhancement of which is

possible through actualizing individual potentialities" (Elias & Merriam, 1980, p. 119).

Knowles considers the self-concept notion of adults with regard to learning as a critical matter. He suggests that adults who have experienced failure in earlier schooling and who have little confidence in their ability to learn will find their negative self-concept a barrier to success in adult education (p. 132).

Statement of the Problem

Earth is our home. It is also the home of other living things with which man interacts. Consider this spectrum of life: there are people who recognize the holistic nature of the environment in which they live, work, and play; there are those who recognize only the utilitarian nature of the environment in which they live, work, and play. There are many who practice an environmentalism with a deliberation that is descriptive of their lifestyles. All practice some environmental exploitation for the human economic benefits it affords us. It cannot be denied that devastating environmental problems exist. Humans are part of these environmental problems, and they can be part of their solutions if they can think and learn more with an ecological, a connective consciousness.

Many human attitudes and activities have been shaped by the formal and informal educational systems in which people find themselves for the greater part of their existence. It may be

that the conventional educational approaches with their compartmentalized learning focus are not working. A disconnected learning environment may very well have disabled many from connecting to the natural environment in more diverse, sustainable, and sensitive ways. "There are better reasons to rethink education that have to do with the issues of human survival which will dominate the world of the twenty first century" (Orr, 1994, p. 26). Conventional educational systems do not seem to be teaching connectiveness, and yet some people still learn it. How they learn it, overcome barriers and obstacles, and sustain themselves in ecological consciousness will be the problem examined in this study.

Questions to contemplate include: Do present higher and adult educational systems and curricula development indeed promote a kind of detached learning from ecological consciousness? Do adult environmental education programs give the learner more opportunity to explore his/her feelings in the environment or is it an extension of the traditional science curricula? Is there a pervasive assumption that persists which suggests that any kind of exposure to science education automatically infuses within us respect, and reverence for the environment?

Statement of Purpose

The purpose of this study is to describe the learning paths of individuals who have chosen to live deliberately with an

ecological consciousness. This is not to suggest that there are many other individuals who cannot be recognized as actively involved with environmental protection or conservation. This study will relate how these identified ecologically conscious individuals have overcome any educational and societal-imposed barriers to their ecological way of living, and how they implement and sustain that consciousness in everyday life.

Research Questions

In order to explore the problem, several questions will be addressed. They include:

1. How is an ecological consciousness acquired?
2. How does the development of an ecological consciousness relate to adult learning processes?
3. What formal and informal educational systems effect development of an ecological consciousness?
4. What resources are used or sought out to create and sustain a conscious connection to the natural world?
5. What are the social and economic implications to the practice of this ecologically conscious life style?
6. What roles do nature or outdoor experiences play in the learning process, and how are these related to the development of an environmental or ecological consciousness?

Significance of the Study

The results of this study are meaningful in several ways.

First, the study has explored a type of learning that goes contrary to what is generally proposed through formal learning and economic practice. The adults in this study have found value in learning with ecological consciousness.

Second, this study has examined an area of learning and practice that has important environmental and ecological implications. Opportunities arise to develop formal and informal educational learning environments that promote healing of environmental wounds and support a more sustainable earth.

Third, this study provides a look at a natural way of knowing that has foundation in indigenous education. The American Indian way of knowing the earth relating to a connective view of inner and outer realities of life may assist educators in development of programs that encompass a more holistic approach to one's surroundings.

Limitations

This study was limited to a selected number of individuals involved in an organic system of farming, the art of partnership with nature instead of control over nature. Given the ecological nature of the production system, which is foundational in this approach to agriculture, responses from these organic producers represent appropriate and fertile sources in which to develop descriptive paths of learning assumed by these identified ecologically conscious individuals. Further, by communicating knowledge from a distinctive organic producer point of view,

there is potential to grasp a fuller understanding of the connective and ecological nature of affective and cognitive realms within a framework of learning.

Definitions

Bioregion: In an attempt to work with the earth on a micro-scale level, a bioregion is viewed as a unique life territory with its own soils, landforms, watersheds, native plants and animals, and other distinctive natural characteristics. On a bioregional scale it becomes easier for people to determine the most ecologically sound and sustainable ways for people to live in a certain place.

Certified Organic: As a label referring to independent verification of organic practices on a farm, "Organic certification is a system of institutionalized trust, allowing consumers to identify and reward conscientious stewards of our natural heritage" (Organic Crop Improvement Association, 1998). The purpose of certification programs is to ensure that foods that are represented as "organically grown" have indeed been raised, processed, and packaged in a manner consistent with established organic food standards. The certifying agency for all of the organic producers in this study is the Organic Crop Improvement Association (OCIA) International, a Nebraska-based organization.

Conventional Production: Within a modern network of

agribusinesses associated with farm inputs, conventional production of food is an agricultural system that uses a chemical-dependent model of farming and which finds a strong foundation in a paradigm of industrialized agriculture.

Ecological Consciousness: As a way of thinking and feeling, it is an epistemology of the terms ecology and mind (Thomashaw, 1995, p. 18); this epistemology can be described as a mode of expression that offers a synthesis of knowledge, whereby an understanding of ecological concepts is considered in combination with corresponding cognitive and affective orientations toward one's surroundings. In other words, ecology and mind together "offer a new synthesis of knowledge, based on a comprehensive reappraisal of various normative views of the world" (Thomashaw, 1995, p. 18).

Environment: From the French word "environner" which means to encircle or surround, environment can be defined as the conditions that surround an organism or group of organisms; or it can be viewed as a complex of social or cultural conditions that affect an individual or community (Cunningham & Saigo, 1997, p. 4). Broadly speaking, everything that affects an organism during its lifetime is collectively known as its environment.

Holism: Opposed to reductionistic, or interpreting nature by examining successively lower levels of organization, holism is an attempt to describe or be concerned with all

properties of whole systems, such as organisms or ecosystems, rather than the properties of their constituent parts. Ecologically, it is a view of the living environment in terms of interacting wholes that are more than the mere sum of their parts. In addition, holistic thinking may be thought of as "the perceptual skill of seeing and understanding the world not as separate parts but as an integrated whole" (Kittredge, 1998, p. 21).

Learning Paths: In viewing learning as an internal process whereby the whole being of the individual or learner is engaged (Knowles, 1970, p. 56), learning paths can be described as those intellectual and emotional functions that inform learning. Additionally, those functions are influenced by the interactions of the learner with his or her environment, that interactive process being defined as experience. A learning path can also be interpreted metaphorically as a journey through life in which knowledge, understanding, and wisdom are gained and reinterpreted many times by diverse interactions with one's surroundings or experiences throughout life. "The quality and amount of learning is influenced by the quality and amount of interaction between individuals and their environment and by the educative potency of the environment" (p. 56).

Linear Process: Process is a phenomenon that involves a series of actions. A linear process is a one in which there is a

single dimensional, straight-line, and causal analysis of those actions "that strives to isolate simple relations between small sets of variables" (Leff, 1978, p. 7). This process is the antithesis of a systems approach to a phenomenon that "stresses examination of the intricate interrelations among interacting elements" (p. 7).

Organic Production: As a system of growing food crops or gardening, it references "organic" as the highest standard available for food producing methods that replenish soil naturally, respect biodiversity, and are uncontaminated by other non-organic methods. Organic producers are then those who embrace this process and are the pioneers engaged in a partnership with nature.

Sustainability: Refers to the long-term endurance of a system.

As an action, sustain means to support adequately, completely, and by implication, indefinitely. Ecological sustainability "is the preservation of nature--that is, the plants and animals, as well as the soil, air, and water on which all organisms depend for sustenance" (Soule & Piper, 1992, p. 79). Sustainability in agriculture relates to the indefinite endurance of the system without depleting its ecological support base (p. 79).

CHAPTER 2

UNFOLDING PATHS OF LEARNING

Introduction

Inasmuch as "no problem in education exists in isolation from other areas of human behavior" (Merriam, 1988, p. 62), a probing literature review reveals not only what has been researched in an area of interest, but the revelation itself proffers a significant contribution to the already existing knowledge base.

A plethora of research exists on the independent issues of environment and education. Education for the environment has become an area of interest for contemporary research in which one finds a blending of educational approaches with ecological approaches to the environment. Oftentimes, this blend has found a reference in environmental education. In order to better understand the nature of connection between the environment and education and that relationship to individuals described as ecologically conscious, it is important to examine the research and writings available on several different subject areas. They include environmental activism, environment and ecology, anthropocentrism, ecological consciousness, American Indian ecological consciousness, American Indian education, earth education, and education and the adult learner.

Environmental Activism

There are several different stages of environmental activism which focus on different problems and which suggest distinctive solutions. Pragmatic resource conservation is indicative of the era of Theodore Roosevelt and Gifford Pinchot. President Roosevelt and the first chief of the U. S. Forest Service were influenced by a publication by George Perkins Marsh, a geologist. Written in 1864, Man and Nature has been considered the wellspring of environmental protection in North America. Alarmed by the wanton destruction of resources occurring on the American frontier in his lifetime, Marsh warned of its ecological consequences. As a result of his book, national forest reserves were established in the United States in 1873 to protect dwindling timber supplies and endangered watersheds.

The basis of the Roosevelt and Pinchot policies in the early 1900s was Utilitarian Conservation (Cunningham & Saigo, 1997, p. 6). Their argument was one that suggested forests should be saved "not because they are beautiful or because they shelter wild creatures of the wilderness, but only to provide homes and jobs for people" (cited in Cunningham and Saigo, 1997, p. 6). This utilitarian approach can still be seen today in the multiple use policy of the Forest Service, a principle of managing public lands for a variety of purposes--timbering, mining, recreation (Miller, 1994, p. 392).

At about the same time opposition to utilitarian conservation influences came about largely from the efforts of John Muir, geologist, author, and first president of the Sierra Club. He argued that nature deserves to exist for its own sake regardless of its usefulness to people. Muir wrote:

The world, we are told, was made for man. [This is] a presumption that is totally unsupported by facts . . . Nature's object in making animals and plants might possibly be first of all the happiness of each one of them . . . Why ought man to value himself as more than an infinitely small unit of the one great unit of creation? (cited in Cunningham and Saigo, 1997, p. 6).

This aesthetic and spiritual outlook has been called Altruistic Preservation because it emphasized the fundamental right of other organisms to exist and to pursue their own interests. To that end, Muir worked hard for the establishment of Yosemite and King's Canyon National Parks.

A growing concern about health and ecological damage caused by pollution from the tremendous industrial expansion during and after the Second World War added a new set of concerns to the environmental agenda. Published in 1962, biologist Rachel Carson's Silent Spring alerted the public to the threats of pollution and toxic chemicals to humans as well as other species (Miller, 1994, p. 38). Her documentation of the pollution of air, water, and wildlife from pesticides such as dichlorodiphenyltrichloroethane (DDT) engendered a movement that helped broaden the concept of resource conservation to include preservation of the quality of the air, water, and soil. This

came about during a time when the country was experiencing rapid economic growth and was not accepting of such a view.

Regardless, her efforts were a driving force in the birth of what is now known as Environmentalism in the United States, or the Environmental Movement because its concerns are extended to include both environmental resources and pollution.

Both activism and research remain hallmarks of the modern Environmental Movement. Techniques descriptive of the movement include litigation, intervention in regulatory hearings, book and calendar publishing, and mass media usage for publicity campaigns. The environmental agenda expanded in the 1960s and 1970s to include issues such as human population growth, atomic weapons testing and atomic power, fossil fuel extraction and use, recycling, air and water pollution, and wilderness protection (Miller, 1994, p. 38). All of this contributed to awakening people to the interlocking relationships between population growth, resource use, and pollution.

In the late 1970s, a coalition which consisted of mostly ranchers, miners, loggers, developers, farmers, and politicians, launched a political campaign which was commonly referred to as the Sagebrush Rebellion (p. 39). In response to the large percentage of public lands under federal control, these various groups together sought to remove most western lands from public ownership and turn them over to the state. The plan then was to persuade state legislators to sell or lease the resource-rich

lands at low prices to ranching, mining, timber, land developers, and other private interests. Then in 1981, Ronald Reagan, a self-declared Sagebrush Rebel and advocate of less federal control, was elected president. During his eight years in office, Reagan mounted a massive attack on the conservation and environmental laws established over the previous 80 years (p. 39). Many people strongly opposed his environmental policies that were overtly attacked by members of Congress. Public outrage and legal challenges by environmental and conservation organizations marked activist activities during this period. The net effect of the Reagan years was to slow down the momentum of environmental protection and resource conservation built up in the 1970s.

Environmentalism is frequently seen as the attempt to work only within the confines of conventional political processes of industrialized nations to alleviate some of the worst forms of air and water pollution, destruction of indigenous wildlife, and some of the most short-sighted development projects. (Devall & Sessions, 1985, p. 2)

These special interest activities do not challenge, question, or change the basic assumptions of economic growth and development. Reformist activists often feel trapped in this very political system. If they do not use the language of resource economists, then they are labeled sentimental, irrational, and unrealistic (p. 3).

Global Environmentalism represents yet another stage of ecological concern (Cunningham & Saigo, 1997, p. 7). Photographs

of the Earth from space reveal how small, fragile, beautiful and rare the home planet is. Humankind shares a common environment at this global scale, and our concerns may shift from questions of preservation or preventing pollution to concerns of the life-support systems of the whole planet. Current human impacts are changing the planetary weather systems, reducing the natural variety of organisms, and degrading ecosystems that could have devastating effects both on humans and on all other life forms (p. 375). Protecting the environment has become an international cause. Major international conventions such as the 1972 United Nations Conference on the Human Environment in Stockholm and the 1992 United Nations "Earth Summit" on the Environment and Development in Rio de Janeiro addressed these new issues (Miller, 1994, p. 676).

Another consideration, which is more urgent in its environmental agenda, is a new environmentalism. Peter Montague, research analyst for Greenpeace and director of the Environmental Research Foundation in Washington D.C. says:

Environmentalism as we have known it for over 27 years is dead. The environmentalism of the 1970s advocated strict numerical controls on releases of dangerous wastes into the environment. Industry's ability to create new hazards, however, quickly outstripped government's ability to establish adequate controls and enforcement programs. After so many years of effort by government and by concerned citizens, the overwhelming majority of dangerous chemicals is still not regulated in any way. In short, the "pollution management" approach to environmental protection has failed and stands discredited; 'pollution prevention' is our only hope. An ounce of prevention really is worth a pound of cure. (cited in Miller, 1994, p. 41).

Launching a new environmental revolution will require significant changes in worldviews, economic and political systems, and lifestyles, and it will involve much controversy. Paradigm shifts from pollution cleanup to pollution prevention, from waste disposal to waste prevention and reduction, from species protection to habitat protection, and from increased resource use to increased resource conservation will have to take place. Parts of the world which have been damaged will have to be allowed to heal; severely damaged areas will need to be restored; the remaining wild areas will need to be protected from destructive development. Lester Brown, president of the Worldwatch Institute, argues that there is no precedent for the rapid and substantial change that needs to be made:

Muddling through will not work. Either we will turn things around quickly or the self-reinforcing internal dynamic of the deterioration-and-decline scenario will take over. The policy decisions we make in the years immediately ahead will determine whether our children live in a world of development or decline Building an environmentally sustainable future depends on restructuring the global economy, enacting major shifts in human reproductive behavior, and making dramatic changes in values and lifestyles. Doing all this quickly adds up to a revolution that is driven and defined by the need to restore and preserve the earth's environmental systems. If this "Environmental Revolution" succeeds, it will rank with the Agricultural and Industrial Revolutions as one of the great economic and social transformations in human history. (cited in Miller, 1994, p. 43)

Environment and Ecology

It is essential to describe some persistent kinds of thinking that characterize environmental and ecological thought

processes which have existed and continue to exist in society today. For purposes of this thesis, it is important to clarify these characterizations to fully appreciate the direction of this research.

According to most dictionaries a literal translation of the term "environment" refers to "the complex of climatic, edaphic, and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival."

(Webster's New Collegiate Dictionary, 1977). A homocentric connotation may translate environment as the "outdoors." The term suggests a composition of factors, living and nonliving, which affect an organism or ecosystem during its lifetime. It refers to the external conditions or surroundings of organisms. Pollution of the environment constitutes a condition that would affect an organism or ecosystem.

On the other hand, environment can also reference "an aggregate of social and cultural conditions that influence the life of an individual or community" according to Webster's New Collegiate Dictionary (1977). One might infer from this definition that it is an association made more in terms of human societal systems than to biological systems. Culture, too, connotes more of an application to a human society than to the social systems of other living things, metaphorically-speaking. Culture is most often interpreted as the customs, beliefs, and social forms of a group of people. However, a more classic

definition of culture comes from Edward Sapir, professor of anthropology and linguistics at Yale from 1931 to 1939:

Genuine culture is . . . the expression of a richly varied and yet somehow unified and consistent attitude toward life, an attitude which sees the significance of any one element of civilization in its relation to all others. (cited in Szasz, 1979, p. 66)

A relational element here is the common thread running through much of the fabric of environmental terminology. Even as one might consider each of these two definitions of the environment in a separate and literal light, they resemble one another figuratively as well, which then expands upon the meaning of the term.

The term "ecology" is relatively a contemporary one. A German biologist (also a philosopher), Ernst Haeckel, coined the term in the middle 1800s (Miller, 1998, p. 95). However, the discipline of ecology is only about a 100 years old. It is interesting to note that there are various types of science, philosophy, and social-related disciplines that have emerged with this term in tow. They include more Western and anthropological thought processes that emphasize such areas as human ecology, deep ecology, the Science of Ecology.

The term itself was initially "oecology." It was derived from the Greek "oikos" that referred originally to the family household and its daily operations and maintenance (Fox, 1995, p. 31). Contemporarily, the term ecology is defined as the study of how living organisms interact with one another (family) and with

their non-living environment (home) (p. 32). More recently the discipline of ecology has become analogous with some interesting concepts relating to the environment and nature. For example, "home" and "family" have become synonymous with earth as home to all living things. The very etymology of the term tends to be appealing in a hopeful sort of way, emphasizing the connective relationship of earth and all living things including humans.

It is the distinctions between these two terms, environment and ecology, that have led to various perceptions, tending to confuse and entrench themselves via the establishment of social, economic, political, and environmental interest groups. A resulting problem is that do-good, legitimate activities to protect the environment have alienated other interest groups to the point of negative action, including incidents which are sometimes physically violent, sometimes scathingly insulting. It is important at this point to consciously reflect upon an extremely pervasive factor underlying the foundation of these various environmental and ecological distinctions and their rationales--that of a human-centered mentality.

Anthropocentrism

Anthropocentrism, or human-centeredness, permeates many of the ideas that comprise interpretation of ecology and environmentalism. According to Fox (1995):

The assumption of human self-importance in the larger scheme of things has, to all intents and purposes, been the single deepest and most persistent assumption of

(at least) all the dominant Western philosophical, social, and political traditions since the time of the classical Greeks. (p. 9)

This idea of humans as the measure of all things is deeply embedded in our culture and our consciousness. Even as those who argue for conservation or preservation of the nonhuman world as environmentalists, they do so because of the value that it brings to humans in the form of scientific or recreational worth. Even the more noble intrinsic view of aesthetic value of the nonhuman consideration is human engendered. It is rarely argued that the nonhuman world should be conserved or preserved for its own sake, for its "use value to nonhuman beings" (p. 11).

There is a movement to challenge the anthropocentric assumptions that have dominated American culture, beyond just the referenced environmental context, but as it relates to such disciplines as sociology, economics and political theory (Fox, 1995, p. 14). Thinking about man's place in the larger scheme of life, it is important to be reminded of several considerations. Humans do not live at the center of the universe and are not biologically unrelated to other living organisms. In fact, man is not even so socially or culturally different from other animals either. It is well known that some animal species have evolved a harmonious system of communication (such as the orcas). Others have made use of tools, educated their young, and live in complex social organizations. It can be argued that it is the degree to which these considerations apply to humans and to other

living things that implies that humans do much better and therefore are of superior status.

The attempt to assimilate other animals to the status of inferior humans makes as little sense as "regarding women as defective men who lack penises, or humans as defective sea mammals who lack sonar capability and have to be rescued by dolphins." Assimilations of this kind succeed only in degrading other beings by failing "to respect them for having their own existence, their own character and their own forms of excellence, their own integrity, their own grandeur." (Fox, 1995, p. 15)

The study of the interrelations of living things to each other and to their environment must be recognized as foundational in the development of a sustainable guiding principle for future earth activities. Humans are part of this principle, and as such, man must recognize the nature of connectivity that exists in the pursuit of cultivation of place. An anthropocentric mind-set represents not only a deluded orientation toward the world but a dangerous one--one based on a consciousness of unsustainability that has given rise to ecological ills on the earth today (p. 13).

In contemplating the historic roots of environmentalism, it can be noted that in the traditional American conservation movement, Conservationists and Preservationists are:

. . . at bottom "anthropocentric": both believe that only people possess intrinsic value, while nature possesses instrumental value; and both regard human beings or human interests as the only legitimate ends and nonhuman natural entities and nature as a whole as means. (Callicott, 1991, p. 24)

It is this anthropocentric thought process that has permitted the entrenchment of an economic system based on a free-market

mentality stressing profits and prices at the expense of the environment. The market does not take into account the external costs of economic goods. All economic goods have both internal and external costs associated with their production (Miller, 1994, p. 644). For example, the price paid for a new car reflects the costs of the factory, raw materials, labor, marketing, shipping, and company and dealer profits. After the car is bought, one pays for gasoline to run it and the maintenance and repair. These are all internal direct costs to the seller and buyer, respectively. Not included in these direct costs are social and environmental costs. These "externalities" are the result of extracting and processing of raw materials to make and propel the car--disturbances to the land, pollution of air and water, reduction of biodiversity, and acute and chronic health effects on humans and other living things.

Since these harmful external costs are not included in the market price, associating them with the car or type of car one drives does not take place. However, consumers pay these hidden costs sooner or later in the form of higher taxes (regulation of pollution), higher health costs, and higher maintenance bills. Clean air and water, good health, and biodiversity are not free. Their costs, however, are hidden from the marketplace.

A suggested solution to the dilemma is full-cost pricing of economic goods and involves internalizing the external costs (p. 644). This may involve government action as few companies will

increase their costs of doing business unless others have to do it as well. The benefits of a redirection in economic growth certainly outweigh the continued destructiveness of the hidden cost mentality of our present-day system to the environment. External costs would no longer be hidden. Consumers would have the information needed to make informed economic decisions. Is this not the essence behind the theory of a true free-market economy?

Moreover, internalizing external costs may stimulate producers to cut costs with inventions that are more resource-efficient and less harmful to the environment and all living things in the production process. The results of the stimulus then become the self-reinforcing dynamic of an ecological-and-sustainability scenario for future human activities impacting earth. New paradigm shifts might result--pollution prevention, not pollution management; waste prevention, not waste disposal; habitat protection, not species management; and increased efficiency of resources, not increased resource use.

There is also a stewardship version of resource conservation echoing from a Judeo-Christian theology which can be linked to an anthropocentric mind-set in its interpretation. These human self-important theological underpinnings relating to the environment suggest that:

People retain a privileged place in the creation--as God's specially favored creatures, and morally accountable regents. We may freely use nature so long as we do so wisely and responsibly; and that could

easily be interpreted to mean efficiently, equitably, and sustainably--the greatest good, for the greatest number, over the long run. (Callicott, 1991, p. 24)

It was John Muir, wilderness preservationist, who suggested that people are just a part of nature on par with other creatures.

His theological argument defended the rights of nature and stirred the ecological consciousness of many when in 1916 he wrote:

Why should man value himself as more than a small part of one great unit of creation? And what creature of all that the Lord has taken the pains to make is not essential to the completeness of that unit--the cosmos? The universe would be incomplete without man; but it would also be incomplete with the smallest transmicroscopic creature that dwells beyond our conceitful eyes and knowledge. (cited in Callicott, 1991, p. 24)

Here are two assumptions and two very contrasting ways of interpreting the connection of man and nature on a theological level. It would be difficult to argue the stewardship viewpoint on a less than "goodness of man" level. Theological interpretations usually withstand criticisms by the very nature of God's involvement. In fact, even Muir's campaign for the preservation and appreciation of wilderness was seen largely in terms of "superior human spiritual values" (p. 24), consistent with an anthropological mind-set.

However, Muir seems to suggest that nature itself possesses intrinsic value, value in and of itself. Certainly this challenges the entrenched historical anthropocentric views of intrinsic value only in terms of humans and nature as only of

instrumental value. Muir articulates through biblical means his vision of an ecological worldview:

God created humans and all other creatures; each are "good" in His eyes as is creation as a whole; impious destruction of God's creative work is indicative of human arrogance (p. 25).

It was Aldo Leopold who carried forth and expanded upon Muir's emerging bio-egalitarian and ecological worldview.

Trained as a professional conservationist in the Pinchot philosophy of the wise use of natural resources, Leopold soon concluded that knowledge of ecology is essential to efficient forest and wildlife management. However, ecology was evolving into an entirely different scientific paradigm than that which characterized the foundations of Pinchot's philosophy. Thinking more ecologically meant that nature was being perceived as "more than a collection of externally-related useful, useless, and noxious species arrayed upon an environmental landscape of soils and waters" (Callicott, 1991, p. 24). Leopold expressed nature as more of a vast organism:

Ecology is a new fusion point for all the sciences The emergence of ecology has placed the economic biologist in a peculiar dilemma: with one hand he points out the accumulated findings of his search for utility, or lack of utility, in this or that species; with the other he lifts the veil from a biota so complex; so conditioned by interwoven cooperation and competitions, that no man can say where utility begins or ends. (p. 24)

In a Sand County Almanac, Leopold (1949/1966) proposed a new land ethic and urged people to develop an ecological consciousness to protect wildlands and wildlife. He likened human beings as

citizens of one biotic community, of no greater, no lesser importance than other living things in the great scheme of life. Leopold simply enlarged the boundaries of community to include the soils, waters, plants and animals, thus affirming the recognition that they too have intrinsic, not just instrumental value. He elevated the status of soils, waters, plants and animals from that of natural resources (an anthropocentric view) to that of fellow members of the whole biotic community (an ecological view) (Leopold, 1949/66, p. 239). An ecological consciousness implied respect for the holistic nature of the biotic community.

Contemporarily speaking, an even deeper ecological environmentalism is emerging. Deep ecology can be understood as premised on several fundamental conditions that build toward a more sustainable earth. From Muir to Leopold to a contemporary environmental awareness, a major theme in deep ecology involves the condition that everyone and every living species is interconnected. The role of humans is not to control nature but to work with nature through ecological understanding and application. On a more global and holistic level, deep ecology suggests that our major goal should be to preserve the ecological integrity, stability, and diversity of the life-support systems for all living organisms. One can infer from this that deep ecology is related to modern science (ecology) with its systems approach. However, deep ecology goes beyond a scientific

interpretation to a more spiritual vision. An awareness of a oneness of all life calls for a fundamental shift of human attitudes and behaviors toward a more biocentric level of thinking about the earth.

Many people are indeed making strides that reflect an ecological awareness in their own lives, perhaps in an effort to heal their own broken connections to their environmental surroundings. Eating healthier foods, growing their own without synthetic inputs, and living more in harmony with their bodies and spiritual selves are examples of an emerging consciousness of life. Author, Brian Tokar (1987) suggests that:

Personal changes, crucial as they may be, are not enough. For our species to survive on this earth, we need to evolve a new culture, a new way of relating to each other and to the world around us. An ecological consciousness has to spread to those who have thus far not been affected by the subtler changes we see occurring. This can create the openings necessary for larger social and cultural changes. (Tokar, 1987, p. 27).

Ecological Consciousness

A concept relating to environmental learning is one most often steeped in ethical and moral theory. Ecological consciousness can be viewed metaphorically as an attempt to bring together the terms "ecology" and "mind." Mitchell Thomashow (1995), author and environmental educator, suggests that when viewed together, ecological consciousness offers "an approach to knowledge based on an understanding of ecological concepts, not

only as they are derived from scientific ecology but also from vernacular cultures and ancient philosophies" (p. 18). Thomashow makes reference to Herbert L. Leff (1978), an environmental psychologist, who suggests four components of an ecological consciousness: ecological systems thinking, a high ability to enjoy and appreciate things in themselves, an ecocentric value system, and a synergistic orientation in interactions with one's social and physical environment. In essence, an ecological consciousness integrates intuitive, spiritual, and rational forms of knowledge. Leff discusses an ecological consciousness as "a specific ideal cognitive, valuational, and motivational orientation toward the world . . . more a goal to strive for than a particular pattern of psychological functioning that we can readily investigate" (p. 282).

According to Leff, ecological systems thinking is a holistic, non-linear thought process that finds expression in the connectiveness of all things (p. 283). It is most difficult to deny the fact that man is fundamentally connected to our physical and social environments, not independent of them. Humans are an integral part of the biosphere. Ecological systems thinking involves the sense of self as part of larger systems. Leff also suggests that it encompasses an awareness and/or a high level of understanding of the ecological processes and how these operate in one's life and surroundings (p. 284). This is not to suggest that a high level of knowledge of ecological processes implies

thinking integratively. Leff contends that the failure to use "cognitive sets that would actively relate this knowledge to [one's] own ongoing environmental experiences" does not relate to a full expression of ecological systems thinking" (p. 285). Of course, the converse is just as important. One may try to engage in attending to ecological processes, but the initiated "cognitive set" may be mute without an understanding of ecological principles. Thus "both knowledge and the activation of cognitive sets that used such knowledge effectively and experientially would be essential for . . . ecological awareness" (p. 285).

Another component to Leff's interpretation of ecological consciousness is the ability to appreciate things in themselves. Leff relates this component to Maslow's concept of "Being-cognition (B-cognition) or the total focusing on the object of perception and a suspension of processes of comparing and evaluating" (p. 141). Leff is quick to point out that carried to extreme, total object-centeredness can lead more or less to a kind of irresponsibility to one's self, others, and surroundings. Clearly, though, possessing a high level of aestheticness, appropriately engaged, contributes to Leff's ideas of ecological consciousness. He points out that it finds expression in those who have a high ability to enjoy this mode of experiencing.

An ecocentric value system is a third component of Leff's version of ecological consciousness. An ecocentric mind-set

might be described as focusing primarily on the welfare of the ecosystem as a whole, an earth-centered view. In other words, it might be conceived as going beyond species and organisms and being concerned with non-degradation or destruction of earth's life-support systems as well as with preservation of earth's biodiversity and ecological integrity (p. 286). This perhaps is the underlying spirit of ecological consciousness. Leff suggests that this component embraces high levels of ecological systems thinking and B-cognition already alluded to, and "an internalized concern for the welfare of all sentient creatures" (p. 287).

A final component of Leff's view of ecological consciousness revolves around "a creatively cooperative pattern of relating to people and other aspects of nature" (p. 283)--a synergistic orientation. He defines synergy as "combined action" or a cooperative action (p. 287). He states that "this term, when applied to human action or thinking, also carries connotations of creative integration, recognized interdependence, and doing good for all parties concerned" (p. 287). As evidence of this, Leff recounts Maslow's study of the Blackfoot Indian culture, a group of people high in synergy:

Among these people, esteem was accorded the person who gave away wealth or shared possessions freely (as opposed to the dominant American practice of according highest esteem to the persons or families who acquire and keep the most wealth for the longest time). The synergy is represented by the correspondence between satisfaction for the giver in high social (and self-) esteem and satisfaction for other members of the culture in meeting needs for food, clothing, transportation, and so on. (p. 52)

Leff admits that the picture he paints of an ecological consciousness is one that may be criticized for being more unrealistic than for the "undesireable cognitive, valuational, and motivational orientations toward the world" (p. 288).

It is important at this juncture to establish how an ecological consciousness is connected to the land. There is an ecological concept that relates individual actions and the effects of those actions on a cumulative level. The concept suggests that even though each individual impact may not seem to produce an effect on anything, the cumulative effect of several instances may lead to impairment. The concept can be viewed negatively when one considers the polluting actions of individuals on a drainage basin or a watershed. For example, eroding soil from one fallow farm field may summon up very little attention if the stream that is receiving it is not muddy. However, suppose there are contributions of soil erosion from many fields on several farms along a meandering stream such that it becomes muddy and choked with suspended material. Not only is the water in the stream impaired but the aquatic system of life is at risk as well. The land, too, is denuded of its fertile abilities. Humans and other living organisms that depend on the life-giving waters and soil for survival as well as for aesthetic comfort are critically affected.

Leopold (Flader & Callicott, 1991) contemplated this ecological concept when in 1942 he attempted to bring some

insight into what he perceived to be a lack of progress toward conservation of the land. He thoughtfully considered the valuelessness of conservation education within the context in which he perceived it being used at the time--volumes of efforts but little heed to a content lacking in meaning. He describes a basic defect:

We have not asked the citizen to assume any real responsibility. We have told him that if he will vote right, obey the law, join some organizations, and practice what conservation is profitable on his own land, that everything will be lovely This formula is too easy to accomplish anything worthwhile. It calls for no effort or sacrifice; no change in our philosophy of values . . . Obligations have no meaning without conscience. (p. 338)

Leopold emphasizes that the changing of human conduct must be reflected in internal efforts that would allow transformation of thought processes and attitudes. Without the ability to engage in a transformation process, self-improvement would be tenuous at best and is translated into unconscious scarring of the face of the land. What is lacking, according to Leopold, is an ecological conscience. He defines it within the context of both science and society. "Ecology is the science of communities, and the ecological conscience is therefore the ethics of community life" (p. 340).

One cannot study ecology without thinking in terms of relationships. The interrelational nature of ecology is community oriented. Ecosystems are interrelated communities of living organisms interacting with each other and their non-living

components, functioning in harmony. So, too, a human society is composed of interacting communities of people who are able to intellectualize and perhaps have the capacity to think with their hearts or with conscience also. It is being able to translate the idea of the interrelational workings of community to that of one's environment or place where one lives that is crucial toward development of an new appreciation of one's own interrelatedness with other people and with the ecosystem. Leopold acknowledges a pervasive lack of this systems-type thinking process within the community of people:

I have no illusions about the speed or accuracy with which an ecological conscience can become functional. It has required 19 centuries to define decent man-to-man conduct and the process is only half done; it may take as long to evolve a code of decency for man-to-land conduct. (Flader & Callicott, 1991, p. 345)

In addition, Leopold suggests that an ethical element must be considered in man's conscious interaction with the environment. "A thing is right only when it tends to preserve the integrity, stability, and the beauty of the community, and the community includes the soil, waters, fauna, and flora, as well as people" (p. 345).

American Indian Ecological Consciousness

N. Scott Momaday, Indian author, speaks of a deeper sense of knowing one's place, a reflection on the Indian way of seeing life. "I am interested in the way that a man looks at a given landscape and takes possession of it in his blood and brain"

