

THE PRODIGAL SPECIES

The Evolution of Worldviews on Nature
and
Using Context To Communicate Ecological Values in America

An Interdisciplinary Study
by
Deanna B

in partial fulfillment of the
requirements for the degree of
Bachelor of Arts in Interdisciplinary Studies

MARYLHURST UNIVERSITY

20 May 02002

Reviewed by
Simeon Dreyfuss
Chair of Interdisciplinary Studies

Deanna B
PO Box 542
Bingen, WA 98605
herself@deannab.info

TABLE OF CONTENTS

CHAPTER ONE: INTRODUCTION	3
CHAPTER TWO: A CIRCUITOUS PATH: ESTRANGEMENT AND REUNION	5
History - Exile and Evolution.....	5
Ecological Messages in Tribal Culture.....	7
Disappointing Sociological Models.....	7
Reconnection - The Land Ethic and Treating Disease.....	8
Defying Entropy - Diversity and Niches	10
Innovation Diffusion	12
Time and Ecosystems	14
The Leading Zero Explained - It's Not a Typo	14
ECOSYSTEM CASE STUDY - RIPARIAN ZONES	16
CHAPTER THREE: EDIFYING NEW FRAMEWORKS IN AN AMERICAN CONTEXT.....	18
Ecology and American Values.....	18
<i>For the Common Good</i>	19
Fallacies of Misplaced Concreteness.....	21
New Economic Structures	23
New Definitions of Growth and Development.....	24
Communicating New Environmental Values to Americans.....	25
Context and Message	27
COMMUNICATIONS CASE STUDY - PROMOTING NEW ENERGY VALUES IN THE UNITED STATES.....	29
CHAPTER FOUR:	
CONCLUSION.....	35
WORKS CITED.....	37
BIBLIOGRAPHY.....	39

CHAPTER ONE:

Introduction

While humans seem unable to agree on the extent of damage and need for concern, it is undeniable that the natural environment has been altered dramatically by their progress. The subject of how much the Earth's systems can absorb and still function remains under continuous debate. For many schools of thought, the existence of systems at a global level are yet unproven. In modern technological society, humans are bombarded with lessons advocating continually increasing consumption, but it seems illogical that an exponentially increasing population can continue to advance combining this outlook with incrementally increasing resources. The result is clearly more people with fewer resources to go around. How will these resources be divided up and at what point does the system break down such that it cannot be repaired?

Defining the problems however, does not immediately provide the solutions. To trace the worldviews that require reconsideration to increase the probability of success, one must go back thousands of years to the beginnings of monotheism, possibly to the advent of the written word itself. Changing these attitudes will take no less than an almost complete restructuring of the perceived relationship between humans and Nature. Some theories contend that humans will always forgo cooperation in favor of personal gain. To hold to this tenet is to relinquish hope that the human race will evolve in such a way that it can once again live as Nature's steward instead of Nature's conqueror.

In the Pacific Northwest, polarization occurs over water, trees, and fish; but to look at the complex system of a watershed we see they are not separate problems but entirely interconnected. This idea of interconnectedness plays into the foundations of human

culture worldwide, but has somehow been lost in Western Industrial society. Being able to step back and look at how human choice affects Nature's systems in the big picture and the long term will regain a perspective essential to making real progress in solving these problems.

Returning to the perception that humans are intimately intertwined with Nature will effect a need for restructuring many relationships they now take for granted. Changes in ethics, politics and economics all need to be made in order to reflect this new understanding. It's not a simple matter of passing laws -- change may be legislated, but attitudes cannot. Education and communication in all of these areas must ultimately play the largest role in effecting this evolution of attitude. Just as ecology describes humans' relationship with the myriad systems on this planet, this approach to change is inherently interdisciplinary. The need for cooperation between nations, industries and communities has never been more apparent. Every one of us must live on this planet; therefore working towards the elimination of environmental problems is to all of our benefit.

This paper is an exploration of the attitudes leading to the situation the human race faces today rather than the environmental problems themselves. It argues for the importance and acknowledgment of planetary systems, and connects historical worldviews of growth and development to the exploitation of natural, human and moral capital. Currently, American culture places high regard on values that encourage this exploitation. Explaining these attitudes in an American context can help promote new ideas to the United States that forge an evolved understanding of humans' place in Nature. It is an attempt to show how culture and economics have influenced each other to condone the current state of environmental neglect and how each is integral to approaching the challenges faced by society today.

CHAPTER TWO: **A Circuitous Path: Estrangement and Reunion**

History - Exile and Evolution

When and how did humans become so disconnected from the rest of planetary life? Joseph Campbell suggests in *The Power of Myth* that the biblical tradition separated man from Nature and made humans exiles from it. Because of sin, the first humans were cast out of paradise into the wilderness. Here, they were required to tame it with their labor for sustenance. In contrast, Shintos in Japan know nothing of the Fall or the Garden of Eden and believe that the processes of Nature cannot be evil. Because of this, even though Tokyo looks like New York on the outside, once inside the buildings, one is back in Japan (22-24).

Chief Seattle's famous speech asking, "But how can you buy or sell the sky? ... The idea is strange to us," is perhaps a more recognizable if not historically accurate example of the difference in worldview between Judeo-Christian and nature-oriented belief systems. Campbell also recounts a pygmy story where a man dies himself after killing a songbird (22). If man is exiled from Nature, it becomes much easier to attempt dominance over it. If Western society had embraced the idea of Nature's divinity, could it have cut down trees and degraded the land without killing God in the process (32)? Lynn White notes, "By destroying pagan animism, Christianity made it possible to exploit Nature in a mood of indifference to the feelings of natural objects (Jenseth and Lotto 13)."

In Darwin's evolutionary theory, *survival of the fittest* painted an unduly harsh view of Nature that mankind is only now beginning to reverse the effects of. Darwin's version of Nature thrived on competition. The strongest survive to reproduce and the weak die, ending their contribution to the gene pool. What he failed to bring equal awareness to

though were the comparable examples of cooperation in Nature as well. For every predator/prey relationship, there were just as many representations of symbiosis, where the relationship between two organisms is mutually beneficial.

This issue of cooperation is crucial to reversing the attitudes toward Nature that Darwin's theories have implanted in the structure of Western industrial society. Now that humans have ecological problems facing the entire globe, cooperation is essential to forming solutions. Environmental degradation shows no concern for political borders, yet everyone must have air to breathe, water to drink and soil to grow food.

Given this context, the competition aspect of Nature surging through favored theories of capitalist economics run decidedly counter to the direction humans must take in order to solve their mutual dilemmas. A world with finite resources cannot keep growing infinitely. It is the duty of humans, conscious and supposedly moral, to discipline themselves such that they reach the steady state economy envisioned by Daly thirty years ago. Contrary to its detractors, the steady state is anything but stagnant. It only stabilizes population, consumption and waste, concentrating technology on things that improve quality of life instead of quantity of stuff.

In North America, Darwin's theories created Manifest Destiny, a worldview that willfully overran millions of indigenous people and destroyed countless tracts of land in the name of Darwinian progress. The American frontiersmen (and women) believed that they were ordained by God to spread their civilization and culture across the land (Kline 24). Only now that the cultures they overran are nearly obliterated do we begin to realize the land wisdom and advanced social organizations that these indigenous people had developed.

Ecological Messages in Tribal Culture

Largely oral traditions, tribal cultures seem to have a more intimate connection to the land than their European counterparts. Abram states that the tribal shaman is the mediator between humans and Nature, he/she interprets Nature's messages and relates them to the community (6). These messages are remembered through stories and myths, told from generation to generation. The details of a story may change with the passage of time and many tellings, but the nature of the message tends to prevail.

Pueblo cultures of the American Southwest speak of an Emergence Place, where humans, plants and animals alike entered into this world through an act of cooperation. While the location of the Emergence Place may be different to each group, they each believe that all humans, animals and plants emerged at the same place and at the same time (Silko, par 23). The emergence tale is obviously a metaphor illustrating how all life is dependent on interdependence for its very existence. The location itself is not as important as the concepts it represents. With the advent of written language however, connection to the land was lost, as it is language capable by humans only.

Disappointing Sociological Models

Darwin's theories of Nature as competitive and self-interested also led to some interesting sociological observations by the late 20th century. Garrett Hardin's classic work, *Tragedy of the Commons*, used an open pasture to illustrate how environmental degradation is the logical outcome for rational humans sharing a common resource. In a common resource situation, a herder benefits directly from adding more animals to his flock, and only shares the cost of degradation among all the other herders. Each herder, looking out for his own interests, is rationally compelled to add more animals, until overgrazing makes the land

useless to everyone. Ostrum points out that problems with common resources have been observed as far back as Aristotle, and cites at least a dozen other studies using the premise to explain everything from acid rain to urban crime (3).

Likewise, the prisoner's dilemma uses the common resource premise to show that cooperation is not in the rational human's best interest. Two prisoners suspected of committing a burglary together are separated and interrogated individually. They are each given the same set of options. If both of them confess, they each spend three years in jail. If neither confesses, they each receive one year. However, if only one confesses, that prisoner will go free, while the other spends five years in jail. While the best case scenario would indicate both staying quiet, the uncertainty of ending up the loser while the other prisoner goes free will likely lead both to confess and spend longer in jail than if both had kept their mouths shut.

In looking at these two models, it becomes easy to lose hope for the future of the environment, if not the human race as a whole. If everyone else is in a preordained rush to grab whatever they can for themselves, then anyone who doesn't play the game ends up with nothing. Of course once the commons is destroyed everyone ends up with nothing anyway. It is a fantastic game of ethics that the entire human race is forced to play. Given a balanced and resilient biosphere with a combination of finite and renewable resources, how do humans balance the instinct for self-interest with the need for cooperation? At what point does one's place in the greater system eclipse their own individual comforts?

Reconnection - The Land Ethic and Treating Disease

Evolution is a continual process, and as willful beings, humans have the unique ability to direct their own. However, this does not mean that they are *apart* from Nature,

for they must remember that they remain *a part* of the dynamic continuum that is Nature. Aldo Leopold understood this and realized the need for a land ethic to help guide humans in their decision-making. As Hardin later illustrated in *Tragedy of the Commons*, Leopold saw that man's only relation to the land seemed to be his own economic gain, not taking into consideration the myriad of beings that rely on the same resources for life and sustenance.

Leopold defined an ethic as a differentiation between social and anti-social behavior, and in this context wrote his legendary essay defining an ecological relationship to the land. If humans are indeed but a strand in the web of life, then at what point does one's self-interest come at the expense of the whole? If all of Nature is the single superorganism of Clements and Lovelock, then the land becomes part of one's own community. Should the land be expected to begin speaking English for us to take notice of the messages it sends? Perhaps the true function of science is to interpret the language Nature speaks. In accordance with Abram's theories, this would make scientists the shamens of modern society, but even this is too reductionist for a clear understanding of how science and spirituality are as inextricably intertwined as the rest of Nature itself. One or the other alone is woefully inadequate, with potentially disastrous effects.

Science, like a doctor with a human patient, attempts to determine the health of the planet's systems by analyzing water, air and soil. Using this information, they can decide how to best "treat" disease in the systems. In tribal cultures, disease is conceptualized as a systemic imbalance, possibly the intrusion of a malevolent presence (Abram 7). As a simplistic model, this does not seem out of line with how modern doctors diagnose human patients. However, a tribal shaman is often both the medical and spiritual advisor for the community, indicating a sense that these two disciplines are indeed involved in a symbiotic relationship.

Returning to disease as imbalance or intrusion, one might further note that an intrusion, whether by virus, junk food, stress or pollution is usually the cause of imbalance no matter what the system's scope. Holistic medicine has realized the importance of balancing the human body's internal systems as a more effective way of treating disease than only treating symptoms, but this approach has yet to become commonplace in approaching the planet's ills as well.

Defying Entropy - Diversity and Niches

Homeostasis refers to the internal balance structures of more highly evolved life forms that preserve the organism's vital systems, such as regulation of body temperature. This concept is also applicable at a planetary level. Climate and hydrology are only two of the systems the Earth uses to regulate itself.

From the laws of thermodynamics, entropy refers to the tendency of energy to dissipate over time through heat loss. On the other hand, the steady state, when used to describe an ecosystem, runs counter to this basic law by continually exchanging a more or less constant rate of energy amongst its components. It may be said that life has the tendency to defy the law of entropy (Oates 105). Attempts to explain this are done by conceding that life exists in an open system, where physics and chemistry are closed systems.

After studying energy use in ecosystems, Odum and Pinkerton recommended a new law of thermodynamics for open steady states with self-production and maintenance capabilities (Oates 116). An open system is capable of importing and exporting materials and/or energy. Therefore it stands to reason that an organism capable of homeostasis is by definition an open system. These open systems, essentially all life forms, interact and exchange materials and energy to maintain themselves, whether on the scale of a human

body's metabolism changing proteins to energy or dead trees providing nourishment for new life through decomposition.

Darrel Faxon recounts how he learned while bird watching that different species of warbler fed only on certain parts of a tree. Black-throated Gray Warblers find their meals in the leafy upper branches, Hermit Warblers stuck to the inner trees' bark and limbs, and Wilson's Warblers covered the understory (20). Noting this amazing bit of specialization and the fact that there was almost never any dispute over feeding areas is a striking example of how each life form on this planet has evolved into its own niche.

Likewise, on the American prairie the suitability of native bison over imported cattle to range life in the West shows how life adapts itself to its native habitat. The bison evolved their large flat heads as a tool for cutting through winter snow to forage vegetation. Cattle are not equipped for this or the harsh climate and as a result large die-offs would occur over winter months before grain began to be supplemented to their diets. The grasses that evolved on the prairie as well have more nutritional value than introduced species. Crested wheat grass for example, does not "cure" and retain its nutritive qualities over the winter. Because much of the farmland taken out of production to combat soil erosion and degradation was planted with this species, herds of mule deer, elk and antelope can come down to winter range and starve in vast fields of grass (Manning 176).

These examples also tend to reinforce the concept of life tending toward diversity. An ecosystem left to its own means continually produces and sustains more and evolving types of lifeforms. If these were closed systems and subject to the force of entropy then precisely the opposite would occur. In order for humans to effectively live within their own niche in the encompassing life-system of Earth, it is important for them to remember that life is truly characterized by diversity.

This is significant because it underscores the importance of looking at the environment as systems instead of only their individual parts. A watershed, a grassland, an ocean; each species resident of these systems has adapted itself to live within the parameters of its habitat. Life continues to regenerate itself in spite of the tendency of energy to dissipate. Possibly entropy will yet win out over a long enough period of time, but the point is that somehow the force of life holds it at bay indefinitely.

When enough pieces are missing from a system, it cannot function. The systems that envelop this planet have been changed dramatically by the hands of human intervention. Of course, humans are not the only creatures that modify their environment. A beaver dam is the most prominent example of habitat alteration in the wild, but humans alone have developed the capacity to fashion their environment to the exclusion of nearly all other life forms. How has this affected the homeostasis that is our only known defense against the force of entropy? We may not be encouraged to find out. Daly notes in *The Steady State Economy* that "extinction itself is a steady state, the special case of zero stocks maintained by zero throughput" (153).

Innovation Diffusion

As human knowledge expands, interpretations of the signs Nature sends must evolve just as society's laws adapt to a current understanding of ethics. This adaptation however can be excruciatingly slow to become commonplace. This innovation-diffusion theory is outlined by AtKisson from Everett Rogers' book, *Diffusion of Innovations* (1976). A few forward thinkers latch on to an idea. If it has merit, the idea will attract others far out of the mainstream, where it continues to pick up momentum. Once momentum reaches a takeoff point, it spreads quickly to the masses until it is no longer new but established (Fig. 1).

Occasionally though, bureaucratic obstinance causes many people to suffer needlessly through resistance to new ideas. AtKisson uses scurvy as a case in point. When a British Captain General discovered lemon juice as a cure for scurvy in 01601, his findings were politely ignored as he was not of sufficient standing in medical fields.

It would be another 150 years until a Scottish Naval surgeon, more highly ranked in medicine, confirmed the first findings and yet another 48 before citrus was adopted by the Navy as a cure for scurvy. In addition, the merchant marine took

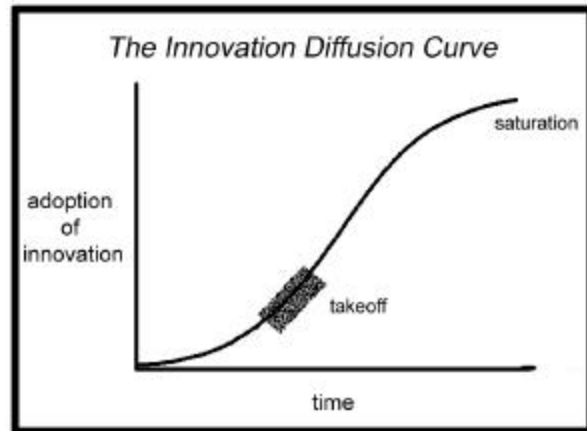


Figure 1: The Innovation Diffusion Curve

an additional 70 years to use limes in common practice for long sea voyages. All in all, well over 250 years elapsed between the discovery of a cure for scurvy and the time when any British seaman could embark on a trip without dread of the disease (189).

This seems quite analogous to humans' indecision in attacking environmental issues, especially considering the hostile government in the United States at this time. The more optimistic will surely believe that humans are right on the verge of that takeoff point described in the innovation-diffusion theory, and those less confident will do well to hope they are correct. Once serious change takes place, it will still be decades before systems may be capable of approaching some kind of stability. This point is a compelling statement for the need to reevaluate humans' perception of time.

Time and Ecosystems

A human lifespan in the United States is roughly 75 years. It takes hundreds of thousands to millions of years to create oil, natural gas, and other underground resources. Native Americans make decisions considering their effects seven generations down the road. Where it is said that Japanese corporations have business plans of hundreds of years, it is rare to see an American business plan that looks more than five to ten years into the future. Is it any surprise that American companies have a hard time letting trees grow for longer than 50 or 60 years, half the minimum time required to restore a resilient ecosystem?

Periods of history in antiquity often lasted many decades or centuries. Modern society has accelerated significant changes in worldview and values to the pace of a single decade as described by Hicks and Hicks. It seems appropriate to say at this point that time is truly speeding up due to the velocity and distance with which technology allows humans to communicate in this society.

The Long Now Foundation attempts to combat the increasing human trend toward viewing time in shorter and shorter spans. In *The Clock of the Long Now*, Stuart Brand describes a chronometer designed by the foundation to keep time for 10,000 years. The design and engineering decisions involved in planning how to keep a clock working that far into the future boggle the mind, but are important exercises in thinking across greater spans of time.

The Leading Zero Explained - It's Not a Typo

As the human race comes to the knowledge that they are but a piece of the grand design that is Nature, the ability to visualize in time frames corresponding to Nature's systems will become an essential part of working within them. A simple exercise anyone can

do to begin seeing time in these longer periods is to place a zero at the beginning of all year notations. Looking at a year that says 02002 instead of merely 2002 can give one a much greater sense of time tens of thousands of years hence. Even if a person were not able to imagine the future time itself, the leading zero is yet the implication of that much time to come.

Ecosystem Case Study - Riparian Zones

While one may not immediately think of a forest as part of a hydrologic system, riparian zones--the forested wetland strips adjacent to stream banks--are nonetheless essential components of watershed ecology. They provide erosion control and water filtration, promote biodiversity and habitat formation. In the Pacific Northwest, the Columbia River Basin encompasses a territory reaching seven states and one Canadian province. The effects of logging, urbanization, agriculture and grazing have reduced these important zones to small fragmented remnants of their pre-European states. It is becoming increasingly clear that restoration of riparian areas is an important step in improving overall stream quality.

Vegetation has considerable capacity for intercepting and storing water. These qualities reduce the erosive effect of water falling directly upon the soil and regulate peak flows, controlling flooding to some extent in the process (Edwards and Abivardi 337). When logging removes streamside vegetation, the root systems that once held soil in place are no longer viable, and the resulting bank erosion deposits more silt in the streambed than water flow can move downstream. This buries the gravel beds necessary for fish spawning.

In addition, the lack of shade from removing the forest canopy raises stream temperatures to dangerous levels for sensitive salmon smolts. The resulting reduction of woody debris eliminates habitat for young fish to feed and hide from predators (Harden 225; Schwantes 481). Forested strips have been shown to be effective in removing nitrogen and phosphorus from agricultural runoff and seepage (Brinson and Verhoeven 284).

Riparian zones also contribute significantly to the biodiversity of an ecoregion, which helps maintain genetic variety in many forms of life. Native plant, mammal, insect, fish and bird populations all benefit from healthy riparian ecology.

In *The Columbia - Sustaining a Modern Resource*, Tim Palmer makes an excellent analogy comparing a watershed to a physical body:

“If the rivers are the arteries of the watershed, then the forests are the skin, lungs, digestive tract, waste-purging liver, and a whole group of endocrine glands fine-tuning the greater organism (73).”

When looking at the system from this perspective, one becomes more aware of how connected humans are to it. This is Nature at its most explicit, mirroring the functions that take place within all life. Rather than a single body, however, it illustrates how each body serves a part in sustaining the entire organism. Salmon and the riparian areas necessary for successful spawning become a vivid example of microcosms in relation to the larger ecosystem.

Encouragingly, the importance of maintaining riparian habitat is creating resonance at local levels such that more of the rivers and streams feeding into the main stem Columbia are getting needed attention likely to improve water quality at all levels. This is extremely important in a watershed that encompasses such a wide territory in numerous states and Canada. Where regulation for the entire Columbia River Basin may not be practical due to political boundaries, individual communities can still take responsibility for their own sections of the watershed.

CHAPTER THREE:
Edifying New Frameworks in an American Context
Ecology and American Values

In 1984, L. Robert Kohls explained 13 values that define American culture. Interestingly, the very first principle he describes states that it is "normal and right that Man should control Nature." This of course is not necessarily a purely American state of mind, as it is handed down directly from Judeo-Christian religious traditions and combined with Darwinism to give humans apparent license to exploit Nature however they see fit. However, perhaps the idea of what is fit and proper for humans to exploit needs to be reexamined in recognition of new understandings of systemic life.

As American culture spreads across the planet, unlimited consumption is a dangerous idea to promote when resources are limited and the developing world looks to the United States for leadership. It has already been argued that the Earth's life-sustaining systems are inherently interconnected. With this in mind, it makes more sense to encourage an ethic of Nature that views humans as a part of these dynamic structures. Humans have certainly established their ability to destroy ecosystems that took eons to evolve, but if their purpose is to continue living on this planet then it is of uncertain logic to eradicate the very things that sustain life. Perhaps in this case, American culture could take a lesson from the tribal cultures it looks upon with such disdain as only potential consumers of goods, largely discounting what it could learn from their intimate relationships with the natural world.

After nearly 20 years, one might hope that Americans' value of change (Kohls 2) would begin the slow and cumbersome process of innovation-diffusion. Indeed, the ideas presented in Carolyn Merchant's *Radical Ecology* (1992), some of which are still decidedly

out of the mainstream, don't seem all that radical today. It appears that Americans are beginning to realize the extent of the damage that has been done, but have yet to overcome two of Kohls' other characteristics, self-interest and materialism (6 and 13) to really begin making progress that seems more than a token gesture for appearances sake. In order for these changes to take place in American society, the entire social framework -- ethics, politics, economics, and spirituality -- must be significantly restructured.

Historically, ecology has been largely ignored by the discipline of economics. Though Aristotle made a distinction between chrematistics and oikonomia (where the word *economics* finds its root), the practice of economics as envisioned by post-Enlightenment thinkers is concerned solely with the rationality of working in one's own self-interest. While this may have worked in times where there seemed to be no limits to expansion, the current state of the planet suggests otherwise. Tragedy of the commons and the prisoner's dilemma, both described earlier, illustrate this model well.

For the Common Good

There is significant evidence to relate current economic models not only to the unsustainable exploitation of natural resources encouraged by the paradigm, but also to the breakdown of social community as well. *For the Common Good* makes a concerted effort to explain why the current model is failing modern society and provides some ideas for evolving the discipline into something that accounts for the depletion of natural resources and prescribes sustaining the life the market depends upon for existence. One of its authors, Herman Daly, was a senior economist at the World Bank from 01988 to 01994, and one of the more outspoken critics of prevalent economic framework. His work has been turning the economics field on its ear since the early 01970s when he first published his proposal for

a steady state economy. According to Donella Meadows (*The Limits to Growth*), "Daly is, depending on your point of view, either the most dangerous economist in the world, or the most visionary."¹

Daly and Cobb predict that the word chrematistics will be found mainly in unabridged dictionaries. They seem to be correct. My own *American Heritage Dictionary* does not list it, and the only online definition to be found is from *Webster's Revised Unabridged Dictionary*. This defines it simply as the science of wealth. Daly goes a bit further in definition to illustrate the context between the two concepts in the original Greek translation. Chrematistics, he says, refers to a "branch of the political economy relating to the manipulation of property and wealth so as to maximize short-term monetary exchange value to the owner." Oikonomia on the other hand is more benignly defined as "the management of the household so as to increase its use value to all members of the household over the long run."

The contrast between these two principles is quite striking. The two key concepts that illustrate their differences are those of the individual over the household and short-term vs. long-term benefits. Chrematistics is concerned only with the accumulation of private wealth in a short time frame. Oikonomia is the more cooperative model, seeking long-term benefits for one's household or community. It is not difficult to see which definition seems to have exerted more influence on the development of economics to this day. However, as science continues to provide compelling evidence to the fact that systems are inherently significant to sustaining individual organisms, "all members of the household," expanded to include nonhuman life as well, begins to sound a lot like ecology.

¹ from an article entitled, 'Four Visionary Suggestions From a World Bank Heretic', *Human Economy*, Volume 14, No. 2

The Greek word oikos, or home, forms the root of the modern word ecology. Likewise, it is the root of Aristotle's oikonomia, which became economics, albeit with an entirely different context. Nonetheless, using home as a metaphor for the environment was a common response in Kempton, Boster and Hartley's American Values research. Clearly a number of Americans already possess a sense of this concept (41).

Humans already attempt to communicate with other species on a regular basis. They talk to their plants and train their animals, surely extending the household to include every living thing that shares the Earth is not such a big leap of consciousness to make. Oikonomia takes on new relevance.

Fallacies of Misplaced Concreteness

Considerable pages are spent in *Common Good* noting the scientific and religious worldviews that helped capitalism and the exploitation of natural resources become the dominant economic model. Since many of these have been discussed in chapter two, they will not be elaborated on here. However, what Daly and Cobb term "misplaced concreteness" is significant to understanding these worldviews from an economic standpoint. The science of Economics must create abstractions of reality in order to have consistent units to study. Because these are merely abstractions, they can form a distorted

Earth, Our Home

"Humanity is part of a vast evolving universe. Earth, our home, is alive with a unique community of life. The forces of Nature make existence a demanding and uncertain adventure, but Earth has provided the conditions essential to life's evolution. The resilience of the community of life and the well-being of humanity depend upon preserving a healthy biosphere with all its ecological systems, a rich variety of plants and animals, fertile soils, pure waters and clean air. The global environment with its finite resources is a common concern for all peoples. The protection of Earth's vitality, diversity and beauty is a sacred trust."

- **The United Nations'
Earth Charter**

interpretation of actuality. Four areas of misplaced concreteness are highlighted in *Common Good*: the Market, measuring economic success, *Homo economicus* and land.

Adam Smith's vision of the invisible hand guiding the marketplace works to a point, but Daly and Cobb argue that competition is self-eliminating, creating monopoly as one is oft to see today in giant multinational conglomerates. In much the same way, individual self-interest degrades moral capital as decisions are made for personal gain instead of the community. This allows for the erosion of public goods and services due to lack of financial incentive, and the rapid depletion of natural resources illustrated by Hardin in *Tragedy of the Commons*. The invisible hand, it turns out, is pushing the market toward its own demise.

The Gross Domestic Product (GDP) is the standard measure of economic health.² It stands for all the money that has changed hands in a market economy during the course of a year. According to the current economic paradigm, this figure must always increase for an economy to be considered "healthy," and the larger the increase the better. However, in order to accomplish this, goods must be created, transported and sold in ever increasing quantities. The environmental and social costs of this continually expanding market fail to be accounted for in the equation and, reminiscent of Enron's recently discovered dubious accounting practices, actually added to the GDP! This is a clear indication of the need for a new economic model.

In what the authors claim is the most significant abstraction of misplaced concreteness in economic theory, *Homo economicus* refers to the consumptive human, whom the science of economics studies at length. They point out two assumptions defining

² Daly and Cobb actually use the term Gross National Product (GNP) in *For the Common Good* (62) as the standard of measurement, but I believe GDP as used in AtKisson's more recent work, *Believing Cassandra* (50), is the term more in current favor.

Homo economicus that (1) an individual's total wants are insatiable and (2) only commodities consumed by an individual contribute to that individual's satisfaction or "utility function." These assumptions entirely preclude any expressions of concern for others' satisfaction or suffering that do not convey themselves as market activity, such as volunteer work. While these assumptions may have been suitable to drive the economics model in its fledgling incarnations, they no longer seem appropriate to creating an economy of community.

The fourth major fallacy of misplaced concreteness is the one most obvious to students of ecology, land. According to Daly and Cobb, land in the dominant economic model refers to the entire natural environment. It is merely a source of capital, generally extracted resources, and unless these resources are used and the land "developed," then it has no intrinsic value. In this model, there are always substitutions to be made as resources are exhausted and they must be used otherwise they are valueless. This of course leads in a vicious circle right back to the scientific and religious worldviews of Nature that both indirectly and actively affirm this fallacy.

New Economic Structures

One of the main goals of the new economic model Daly and Cobb propose is decentralization in such a way that markets are once again placed in the hands of communities. Limits should be introduced on resource extraction so as to increase their length of productivity. They predict that enforced scarcity of materials will influence market price such that it becomes closer to the real cost in terms of nonrenewability. In addition, the flow of wealth should continue relatively uninterrupted through the increase in price. Less realistic, but equally appealing are maximum and minimum income ranges. This policy would distribute wealth more equally, but still retain some incentive for personal profit.

Ideally, without so much stuff to distract, the time not spent on creating additional wealth or consumption could be used on improving one's community and education. In any and all cases though, the reconnection of humans to the land (Nature) is essential for bringing about a new conception of the world, which demands these changes to take place.

In order for Americans to understand how to structure the new societal framework, the message will be best presented in three main concepts, conceding to American pragmatism (Kohls 12) and always reinforcing what the benefit will be for them. New ideas will still be market driven, but in order to preserve moral capital they must be globally cooperative, locally sustained and not consumption-based. The link between humans and Nature must be consciously reintroduced in a way that has meaning to the culture it is communicating to.

New Definitions of Growth and Development

The economy in the new model can still be market-driven, but requires a redefined perspective on growth. It is well established that unlimited growth with finite resources is mathematically impossible. Consumption-based growth must be eliminated in favor what Daly terms the *steady state economy*. In this state, the total population and the total stock of physical wealth remain constant by a minimal rate of throughput (152). Even at the low population growth rate of .9%, the United States still adds 2.5 million people to its ranks each year (Population and Environment). Each of these people need to be fed, housed, clothed and educated, plus they will eventually want televisions, microwave ovens, automobiles and computers. Imagine this scenario in nations that have much less wealth and much higher population growth rates and it becomes a very compelling argument for stabilizing all growth rates at or near zero.

In the United Nations' Earth Charter, social and economic democracy, justice and peace are all essential elements in addition to restoring ecological systems for the common goal of living sustainably upon this planet. As one of the most participatory international documents ever produced, it acknowledges injustice, poverty and oppression as an integral cause of environmental degradation, a connection the United States' government has yet to make (Declarations of Interdependence 20).

AtKisson makes the distinction between *growth* and *development* by first defining growth to be "the increase in human population, resource use, and the emission of waste." Development instead refers to "improvements in human technology and advances in the human condition, including health, education, intelligence, wisdom, freedom, and the capacity to love" (24). When defined in this way it becomes clear; growth must cease, but development can be unlimited. These recreated definitions of growth and development seem to be a common thread throughout many ecological works of the past fifteen years -- AtKisson, Daly, Honadle and Oates all talk about these terms in a similar context.

Communicating New Environmental Values to Americans

Also encouraging is that Americans' personal values seem increasingly in favor of more ecological practices, even if the bureaucratic behemoth known as government is slow to catch up. Kempton, Boster and Hartley found in the mid-1990s that three fourths of the Americans they sampled from a diverse range of environmental backgrounds believed that Nature has complex interdependencies. Ninety-seven percent believe that there is a limit to Nature's resiliency (49). Unfortunately, the average informant only appeared to have the most basic knowledge of the issues tied to global warming. Often limited to a vague cognizance of key terms, for instance they were more apt to believe that banning spray cans

and pollution controls were more effective than increasing energy efficiency at preventing global warming (215).

This might indicate that the best approach to reaching Americans would be a widespread information campaign. It is difficult to make good decisions without coherent information to work from. AtKisson notes the story of a Swedish cancer researcher who created a consensus report on global environmental problems by sending repeatedly revised draft copies to a wide range of Swedish intellectual leaders. His report caught the attention of Sweden's king, who endorsed it and sent workbooks based on its principles to every household and school in the nation (160).

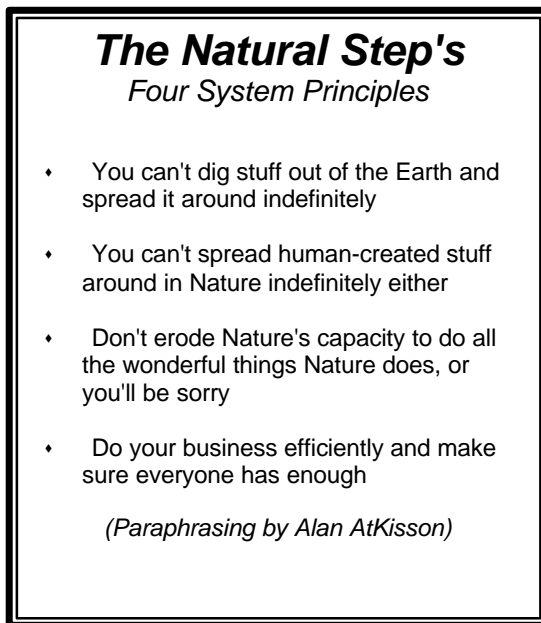


Figure 2. The Natural Step

Now known as *The Natural Step* (Fig. 2), the program highlights four principles called system conditions that explain in lay terms a "quantitatively verifiable definition of sustainability." While *The Natural Step* is aimed at transforming business and economy, the Swedish government does not mandate it. Instead it has been implemented in both business

and community through non-governmental organization. This shows at least the propensity of some humans to do the right thing given clear information. Kempton, Boster and Hartley's study indicates that most Americans may also be prepared to readily accept and use

this information. Perhaps tragedy of the commons is not the inevitable result of instinctual human behavior after all.

Context and Message

The United States in particular however has more difficult contextual issues to complicate the effective implementation of such a program. Geography, climate, lifestyle, race and cultural background are only a few of the items that influence context, and the United States has increasingly wide varieties of all. Honadle explains how context is intrinsically important to influencing human behavior particularly in natural resource policy. Why and how humans use Nature's resources in different situations is essential to forming policy that works for an individual community in addition to protecting the intended resource. This is currently best observed in practice in environmental mediation, where stakeholders are identified, consulted and consensus reached on new policy.

When expanding our mitigations into ever-larger systems, the degree of uncertainty raises considerably. This calls for a much greater range of flexibility than exists in current bureaucratic models. Lee (01993) and Holling (02001) each use an adaptive management approach in their models towards achieving sustainability.

Lee examines numerous models of learning applied to analyzing ecosystem practices. Humans' basic decision-making process is characterized by *bounded rationality*, where decisions seek a zone of acceptable range rather than optimal outcomes (143). This seems a logical model for approaching ecosystem management, as maximizing for all variables is statistically impossible (Hardin 368). It is not guaranteed that decisions made using this method will be effective. If the ability to easily adapt procedure to better maintain the acceptable range was in practice however, then the rigidity and breakdown phases of

Holling's panarchic model are likely to be less devastating as the whole system moves closer to Daly's steady state.

Beyond policy however, lies civic implementation, where effective communication becomes inherent to transmitting change of such large scale in a manner both understandably and contextually to the general public. Context and adaptive management each indicate the importance of local autonomy in putting policy into practice. Those who live in a place are the ones directly affected by environmental policy. Giving people the freedom to reach provided goals as they see fit is likely to go far in reducing the animosity created from being told what to do by fat men in suits a thousand miles away.

Communications Case Study - Promoting New Energy Values in the United States

Cultural differences in the United States divide the way Americans view not only the environment, but society and the world as well. These are all contexts to be considered when crafting a message that every American must understand. Attempting to define all cultural viewpoints in the United States would be far beyond the scope of this paper. As a small snapshot to highlight different approaches in conveying a message to Americans, the following scenario is offered:

This may seem a little preposterous to imagine, but please try to suspend disbelief for a moment. Sometime in the not too distant future George W. Bush, President of the United States, Leader of the Free World, has somehow had an epiphany. All of a sudden, increasing gas mileage is more important than drilling in the Alaskan wildlife refuge. Alternative energy sources and mass transportation are subsidized and petroleum companies (well, everyone actually) taxed according to their environmental toll instead of their income. Urban planners design better neighborhoods and eliminate sprawl. SUVs quickly fall out of favor. Monsanto and Dow go bankrupt and organic farming becomes the norm. As soil quality improves, the things grown in it regain their nutritional value. Hemp products replace nearly everything both wood and petroleum are needed for. Forests rebound, and many species once nearly extinct are again plentiful.

Stopping there before it gets **too** unbelievable, let us back up to changing America's energy priorities. After the befuddled Commander-in-chief saw the light, I was hired to consult in designing the information campaign explaining to an equally confused nation what their part in the new energy-efficient America entails. In a focused mass media operation not seen since WWII, the country is called upon to do their part to make the effort work.

Note that this is not intended to be a discussion of all the issues mentioned, nor a design for an entire media campaign. The energy policies are already being implemented; the rest is a result of that one step in reversing the tide of human thought. The media campaign

is to promote the new way to the public in order to help ease the transition. The report is for consultation, to compile and present ideas.

It was concluded to use generational differences as a theme in the media campaign as this might be one of the easiest cultural divides to overcome on a large scale when promoting cooperation and community. Not only are there some unique opportunities for intergenerational communication in this context, but age has a certain amount of influence on value development, especially in children. The best time to mold values is before a child reaches her teen years. There are three distinct periods that define evolution of personal values in humans: imprinting, modeling and socialization.

Hicks and Hicks describe the three age periods in value development to help define methods to teach children. Taken from Morris Massey's book, *The People Puzzle*, value development begins at birth. For the first seven years, children learn by imprinting (Hicks 13). This might lend itself well to teaching children of this age to remember small things, such as turning off lights, television, and especially computers! They could also rinse the kitchen recycling for older children to sort and put out at the curb each week. Combining these chores with a clear message of why it is important to remember them can go a long way toward setting patterns of cooperation that will hopefully remain with them for a lifetime. Distributing and using a program such as *The Natural Step* can aid parents and schools in conveying these ideas. This approach obviously requires the commitment and involvement of parents, but the Hicks already suggest that the parents of the youngest generation of Americans today take much more interest in their children's lives, possibly as a result of feeling abandoned by their own workaholic parents (274).

Using the older generation to reach children of this age as well could be a very effective method. Nearly half the Americans of retirement age already spend an average of

3.5 hours a week in volunteer work (America's Senior Volunteers). Patriotism and civic duty are still important values to people of this generation of Americans (Hicks 302). As the last surviving generation to live through the WWII effort, they will likely be eager to pass on their legacy of self-discipline and cooperation toward a common goal to this youngest generation of Americans. Many of those who remember the war effort were likely not much older than elementary or preschool age at the time, and can use this point to give even more context to their story for children of this age level. They might go to schools in their neighborhoods and talk about the things they had to do when they were children for the good of the country, and how it was now the children's turn to do their part.

When part of the larger goal includes increasing community and intergenerational communication, this approach meets multiple objectives. It may even be possible to find in international neighborhoods members of various ethnic communities to talk to children of similar ethnicity, thereby increasing the contextual and connectivity value. In addition, volunteers are cost effective.

From ages 7 to 13, value identification is learned by modeling (Hicks 15). Children find figures they look up to and want to emulate. The same intergenerational approach might also be effective here as well, though the message might be given in a slightly different way. Rather than talking about what they were doing to help in the war effort themselves, volunteers might instead talk about people such as Rosie the Riveter -- a hero to those working hard on the home front. Who could be a comparable figure in this era?

At age 13, value development becomes an issue of socialization. Children are moving out into the world and testing their value conclusions among their peers. Once again, involvement becomes key, but patience is also needed as teens decide for themselves

what their value systems will entail as adults. This is the time to engage them in the community and challenge them to be active participants in the collective good.

Technology is an important part of teens' lives in America. They have grown up connected to the Internet, and have access to a much wider range of information than previous generations. The ability to communicate with people in other parts of the world, even if only for the purpose of playing a video game, still helps instill an impression of the world as bounded and finite. Because they are growing up in a world that changes so rapidly, they are more flexible and likely better able to understand the importance of methods such as adaptive management. Though there still may be some issues concerning instant gratification to overcome, the key may be in teaching the difference between wants and needs rather than just telling people to consume less. This concept of course would do well to be promoted to all generations.

Moving on to other generations of Americans, communication technique becomes far more difficult to ascertain in people who have had much different values instilled in them as children. The generation in America that ranges in age from their mid 20s to late 30s, known as Generation X, is considered a sort of lost generation. Stuck between the Baby Boomers and the Net Generation, they bore the brunt of the Baby Boomers' rebellion against the war generations while growing up. As family and social ethics were being challenged and rewritten, this generation was raised without a clear sense of values as in previous generations.

Fortunately though, this generation may have more influence in the new society than they could expect from the old model. While Generation X doesn't have the numbers to constitute a formidable consumptive force, they nonetheless seem to be embracing the worldview that efficient and cooperative communities are an integral part of a healthy

society. They have grown up with recycling and Earth Day and remember gas rationing in the 1970s. Plus, many of them were still in high school when computers began to be implemented in classrooms. They have the technological background to contribute much toward implementing America's new priorities at a civic level.

The older American generations, Baby Boomers and the War Generations also have different views on the changes taking place in America. Those of the War Generations are still largely of the mind that the government knows what's best, and will do whatever they can to help. Even if they don't completely understand the science behind the decisions, if the government came to the conclusion that this was the best course to take then that would be good enough for them. Some things they could do to help in their own communities have already been discussed.

On the other hand, the Baby Boom Generation has been largely involved with much of the environmental action since the early 1970s. According to Kempton, Boster and Hartley, eighty percent of their combined study sample agreed that Americans needed to return to more traditional values and a less materialistic lifestyle (134). While Baby Boomers were not the only American adult generation represented in the sample, it nonetheless indicates that their contributions to the environmental movement have had noticeable impact on the American consciousness. In the media campaign, one might see a public service spot picturing a baby boomer and their retirement age parent buying their first hybrid automobiles together.

While these are only the most basic frameworks of ideas, it shows how generational context could be effectively used to aid the United States government in motivating the American public toward energy efficiency. Another important factor of the entire worldview proposed is more difficult to handle through governmental agency, that of spirituality.

Because of Constitutional separation of church and state, it is a less practical message to consider for this exercise. However, one way to include the idea may be to talk about how nearly every major religion has some ecological tradition in its history, encouraging each person to search out these teachings in their own faith, whatever it may be. Using all of these methods will go a long way toward softening the blow to the American lifestyle and using the challenge to redirect our energy in more positive directions.

CHAPTER FOUR:

Conclusion

The planet's systems are dynamic and resilient, but the human race appears to have lost touch with some of the fundamental rules governing how to work within them. An ethic is recommended that allows humanity to flourish in cooperation with these systems. Humans, as conscious and moral beings, might be inclined to preserve all life, as this protects the systems that sustain us all. Diversity appears to be a component of life, possibly even protecting against the force of entropy. Left to itself, the process of evolution produces ever more forms of life in ever-greater complexities of interaction. This is in direct contrast to the laws governing energy dispersal.

Managing humans' interaction with Nature in terms of ecosystems requires a much more flexible approach than currently used. The complexity of an ecosystem precludes the ability to control for every variable, therefore an adaptive approach seems a much more logical choice. As Nature's systems are active and flexible, so must be any management style designed to work within them.

Also integral to reconnecting with Nature is thinking in longer spans of time. This is an important contextual issue in defining sustainability within ecological time frames. The twenty years defining a human generation is barely long enough to register a trend at a climactic scale. One reads an account of the more than two centuries it took to protect sailors from scurvy on long sea voyages, and wonders how much longer it will take before the real cause of environmental degradation, humans' philosophical separation from Nature, is eliminated.

The United States has not only a hostile perception of Nature derived from Darwin that influenced the formation of its scientific, social and economic infrastructure, but a wide

range of cultural and geographic context that makes communication and implementation all the more difficult. It is not an easy task, diffusing such change to nearly 300 million people. Fortunately, many Americans already seem to recognize the logic demanding some change, and much of the technology needed to redesign society's infrastructure already exists.

Communication and implementation are all that really obstruct the way. A government committed to sincerely leading within these principles will likely find more consensus than the capitalist machine would have you believe. Giving communities the authority and tools to implement their own programs can help create ideas that work in the special context of individual situations.

Communicating ways to promote new energy efficiency policies could work well in the United States with an intergenerational approach. Combined with value development models in children, an effective program might include Americans who lived during WWII and can tell their stories to children while encouraging the children to do their part now. Parental participation is important to the success of this program, and the United States is fortunate to have a generation of children now who spend more time with their parents than in recent decades.

Since it is decisively harder to instill new value systems past one's teen years, the program would concentrate more on helping make the transition easier in older generations. Still, an innovation takeoff point does seem to have a strong window of opportunity in America at this time. Because of the oldest generations' devout patriotism, the Boomers' who took environmental issues to the mainstream, and the younger generations who have been raised with more ecological understanding and technological aptitude, the United States stands a tremendous chance at success in making needed changes at this time.

Works Cited

- Abram, David. *Spell of the Sensuous*. New York: Vintage Books, 01996.
- America's Senior Volunteers*. Independent Sector Pamphlet. June 2000.
- AtKisson, Alan. *Believing Cassandra: An Optimist Looks at a Pessimist's World*. White River Junction, VT: Chelsea Green, 01999.
- Brand, Stuart. *Clock of the Long Now: Time and Responsibility, The Ideas Behind the World's Slowest Computer*. New York: Basic, 01999.
- Brinson, Mark M. and Jos Verhoeven. *Riparian Forests*. Hunter 265-299.
- Campbell, Joseph and Bill Moyers. *The Power of Myth*. New York: Doubleday, 01988.
- Daly, Herman E., Ed. *Toward a Steady State Economy*. San Francisco, CA: W.H. Freeman and Co, 01973.
- Daly, Herman E. and John B. Cobb Jr. *For the Common Good: Redirecting the Economy Toward Community, the Environment and a Sustainable Future*. Boston, MA: Beacon Press, 01994.
- Edwards, Peter J. and Cyrus Abivardi. *Ecological Engineering and Sustainable Development*. Urbanska et al 325-352.
- Faxon, Darrel. *A Voice in the Wilderness: Economics, Biodiversity and Man*. Pittsburgh, PA: Dorrance, 02000.
- Harden, Blaine. *A River Lost: The Life and Death of the Columbia*. New York: W.W. Norton & Company, 01996.
- Hardin, Garrett. *Tragedy of the Commons*. Science 162 (01968): 1243-1248.
- Hicks, Dr. Rick and Kathy. *Boomers, Xers, and Other Strangers: Understanding the Generational Differences That Divide Us*. Wheaton, Il: Tyndale House, 01999.
- Honadle, George. *How Context Matters: Linking Environmental Policy to People and Place*. West Hartford, CT: Kumarian Press, 01999.
- Kempton, Willett, James S. Boster and Jenniffer A. Hartley. *Environmental Values in American Culture*. Cambridge, MA: MIT Press, 01995.

- Kline, Benjamin. *First Along the River: A Brief History of the U.S. Environmental Movement*. San Francisco, CA: Acada, 02000.
- Kohls, L. Robert. *The Values Americans Live By*. Washington, DC: Meridian House, 01984.
- Lee, Kai N. *Compass and Gyroscope: Integrating Science and Politics for the Environment*. Washington, DC: Island Press, 01993.
- Leopold, Aldo. *The Land Ethic*. The Norton Book of Nature Writing. Eds. Robert Finch and John Elder. New York: Norton, 01990.
- Manning, Richard. *Grassland: The History, Biology and Politics of the American Prairie*. New York: Penguin, 01995.
- Oates, David. *Earth Rising: Ecological Belief in an Age of Science*. Corvallis, OR: Oregon State University Press, 01989.
- Ostrum, Elinor. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge, England: Cambridge University Press, 01990.
- Palmer, Tim. *The Columbia: Sustaining a Modern Resource*. Seattle, WA: The Mountaineers, 01997.
- Population and Environment*. 02002. National Wildlife Federation. 15 Apr. 02002.
<<http://www.nwf.org/population>>
- Schwantes, Carlos Arnaldo. *The Pacific Northwest: An Interpretive History*. Lincoln, NE: University of Nebraska Press, 01996.
- Silko, Leslie Marmon. *Landscape, History and the Pueblo Imagination*. Constructing Nature. Eds. Richard Jensen and Edward E. Lotto. Upper Saddle River, NJ: Blair Press, 01996.
- The United Nations' Earth Charter*. "Declarations of Interdependence." Orion Winter 02002: 18-53.

Bibliography

Abram, David. *Spell of the Sensuous*. New York: Vintage Books, 01996.

Abram's philosophical work traces man's separation from Nature through the study of language and magic. He contends that before the development of written language, humans were intimately connected to the natural world and uses as example indigenous peoples in remote areas of the modern world. Many of these cultures still exist almost entirely on oral communication, and retain a certain amount of what Abram proposes to be direct communication with the divine itself. His analysis begins with a discussion on the concepts of phenomenology essential to his own theory and a history of written language. This, combined with his experiences studying tribal shamen in Southeast Asia form the basis of compelling insight for devising methods of reconnecting ourselves with "the sensuous world".

America's Senior Volunteers. Independent Sector Pamphlet. June 2000.

The American Heritage Dictionary of the English Language. Boston, MA: Houghton-Mifflin, 01969-01978.

AtKisson, Alan. *Believing Cassandra: An Optimist Looks at a Pessimist's World*. White River Junction, VT: Chelsea Green, 01999.

AtKisson uses the Greek myth of Cassandra to frame his endeavor to enlighten and motivate people towards sustainable living. Written in an engaging and conversational manner, he acknowledges the terrible mess the environment seems to be in, but stops short of inciting panic. Instead, AtKisson highlights some people he believes are doing things right, and outlines the evolution humans must make as a species to hopefully enact lasting repair upon the biosphere.

Bennett, Milton J., Ed. *Basic Concepts of Intercultural Communication*. Yarmouth, ME: Intercultural Press, 01998.

Brand, Stuart. *Clock of the Long Now: Time and Responsibility, The Ideas Behind the World's Slowest Computer*. New York: Basic, 01999.

Campbell, Joseph and Bill Moyers. *The Power of Myth*. New York: Doubleday, 01988.

Daly, Herman E., Ed. *Toward a Steady State Economy*. San Francisco, CA: W.H. Freeman and Co, 01973.

Daly, Herman E. and John B. Cobb Jr. *For the Common Good: Redirecting the Economy Toward Community, the Environment and a Sustainable Future*. Boston, MA: Beacon Press, 01994.

Declarations of Interdependence. Orion Winter 02002: 18-53.

Faxon, Darrel. *A Voice in the Wilderness: Economics, Biodiversity and Man*. Pittsburgh, PA: Dorrance, 02000.

Faxon illustrates the interconnectedness of Nature through the forest ecosystem of western Oregon, which he has been observing (and logging) for a lifetime. He shows with careful detail and engaging anecdote how each creature in the wilderness has its own function within the web of life. These observations are countered with the economic realities of people, businesses and livelihoods that are affected by the political struggles to accommodate everyone. Faxon remains practical in his search for solutions, acknowledging that the demand for resources is not going to abate anytime soon, but also realizing that the manner in which humans obtain these resources is inherently tied to their ability to do so over the long term. He warns the status quo cannot be maintained in its present state and proposes a comprehensive overhaul of current policy in order to find a more sustainable balance.

Finch, Robert and John Elder, Eds. *The Norton Book of Nature Writing*. New York: Norton, 01990.

Forstner, Lorne J. and John H. Todd, Eds. *The Everlasting Universe: Readings on the Ecological Revolution*. Lexington, MA: D.C. Heath and Co, 01971.

Harden, Blaine. *A River Lost: The Life and Death of the Columbia*. New York: W.W. Norton & Company, 01996.

Hardin, Garrett. *Tragedy of the Commons*. Science 162 (01968): 1243-1248.

Hicks, Dr. Rick and Kathy. *Boomers, Xers, and Other Strangers: Understanding the Generational Differences That Divide Us*. Wheaton, Il: Tyndale House, 01999.

Dr. Hicks and his wife, Kathy, present a good overall view of the historical and cultural events in each decade of the 20th century in the context of a person who lived through it. While focusing the material on those within a Christian values system, the Hicks are still able to provide the bulk of the commentary without too many proselytizing overtones. This information is used to explain to the reader why members of each living American generation have their own sets of values, what they are, and how best to communicate intergenerationally.

Holling, C.S. *Understanding the Complexity of Economic, Ecological and Social Systems. Ecosystems* 4 (02001): 390-405.

Honadle, George. *How Context Matters: Linking Environmental Policy to People and Place*. West Hartford, CT: Kumarian Press, 01999.

The conditions that influence why and how humans use a natural resource vary widely. Honadle writes in advocacy of considering context when developing environmental policy. To give an idea of the options available, he outlines different intentions and methods of implementation for resource policy, and highlights two case studies in context paradigm policymaking. The book also profiles types of stakeholders and concludes with three competing hypotheses on designing sustainable institutions. It builds a strong case for the logic of more local autonomy in forming environmental policy.

Hunter, Malcolm J., ed. *Maintaining Biodiversity in Forest Ecosystems*. Cambridge: Cambridge University Press, 01999.

Jagtenburg, Tom and David McKie. *Eco-Impacts and the Greening of Postmodernity: New Maps for Communication Studies, Cultural Studies and Sociology*. Thousand Oaks, CA: Sage Publications, 01997.

This work painstakingly details the path of ecological movement through history, sociology, psychology, economics and communication. The book concedes the interconnectedness of Nature through the facets of human life it affects, and highlights how each discipline ultimately contributes to enlightening public opinion towards environmental goals.

Jenseth, Richard and Edward E. Lotto, Eds. *Constructing Nature: Readings From the American Experience*. Upper Saddle River, NJ: Blair Press, 01996.

Kempton, Willett, James S. Boster and Jenniffer A. Hartley. *Environmental Values in American Culture*. Cambridge, MA: MIT Press, 01995.

This is an anthropological work analyzing informants' views on Nature and environmental policy in the United States. In addition to members of the general public, the respondents range from out-of-work sawmill workers in Oregon to members of the radical Earth First! organization. From a background in cognitive anthropology, the authors conducted semistructured interviews and used these comments to help phrase a fixed form survey that each informant also answered. The data was then analyzed by topic and percentages of respondents in various places of the environmental spectrum that agreed with a particular statement. The information in this book provides valuable insight into the opinions on the environment of a diverse range of Americans.

Kline, Benjamin. *First Along the River: A Brief History of the U.S. Environmental Movement*. San Francisco, CA: Acada, 02000.

Kohls, L. Robert. *The Values Americans Live By*. Washington, DC: Meridian House, 01984.

Lee, Kai N. *Compass and Gyroscope: Integrating Science and Politics for the Environment*. Washington, DC: Island Press, 01993.

Lee frames the difficult bedfellows of environmental science and politics with the efforts of the Northwest Power Planning Council to restore salmon in a seriously depleted watershed. He focuses on a system of adaptive management that allows the flexibility to adjust methods as a situation warrants and argues that resource management is a civic science intrinsically public, technical and open to learning. Expanding upon that, he illustrates different learning paradigms that influence our decision-making process and brings them back into the context of power and salmon in the Northwest.

Manning, Richard. *Grassland: The History, Biology and Politics of the American Prairie*. New York: Penguin, 01995.

Meadows, Donella, et al. *The Limits to Growth*. New York: Universe Books, 01974.

Merchant, Carolyn. *Radical Ecology: The Search for a Livable World*. New York: Routledge, 01992.

Merchant explains the many facets composing the modern environmental movement in a straightforward and logical manner. She gives a short history of the ecological problems faced on Earth, and discusses different scientific and spiritual worldviews that contribute to the mindset prevalent today. From there, she profiles several key movements attempting to reverse the course of environmental degradation from different fronts. An informative primer with bibliographic information arranged at chapter's end for ease pursuing further reading on a particular section in the book.

Oates, David. *Earth Rising: Ecological Belief in an Age of Science*. Corvallis, OR: Oregon State University Press, 01989.

Ostrum, Elinor. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge, England: Cambridge University Press, 01990.

Ostrum's examination of policy governing common resources includes both sociological theory and case histories from around the world. She details both what has worked and what has not, attempts to explain reasons why, and provides frameworks for analyzing common resource policy.

Palmer, Joy A., Ed. *Fifty Key Thinkers on the Environment*. New York: Routledge, 2001.

Palmer assembles short biographical histories of fifty figures with lasting impact on environmental thought. Arranged in chronological order, the essays include religious, philosophical and literary leaders alongside activists and an architect. Each entry not only contains bibliographic information for that essay, but also major writings of the subject and other related readings.

Palmer, Tim. *The Columbia: Sustaining a Modern Resource*. Seattle, WA: The Mountaineers, 1997.

Peterson, Lee. *AllExperts Question and Answer - Geology*. Email to the author. 19 May 2002.

Population and Environment. 2002. National Wildlife Federation. 15 Apr. 2002.
<<http://www.nwf.org/population>>

Schwantes, Carlos Arnaldo. *The Pacific Northwest: An Interpretive History*. Lincoln, NE: University of Nebraska Press, 1996.

Urbanska, Krystyna M., Nigel R. Webb and Peter J. Edwards, eds. *Restoration Ecology and Sustainable Development*. Cambridge: Cambridge University Press, 1997.

Webster's Revised Unabridged Dictionary, 1913. 9 Sept. 1999. The ARTFL Project. University of Chicago. 11 May 2002.
<http://humanities.uchicago.edu/forms_unrest/webster.form.html>