ECOSHIFT

The Movement That Is Transforming the Relation of Humanity to Earth

By Tony Federer

Dedication

ECOSHIFT is dedicated to my four grandchildren in hopes of improving their future. They will inherit the Earth and will live through the major changes that are coming in the next half-century. What their life is like depends greatly on what human individuals, groups, communities, organizations, politicians, corporations, and governments are deciding to do NOW.

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Permission has been granted by Maureen Westrick and Susan Meeker-Lowry to extensively quote their writings from the Conway Daily Sun.

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Preface

Styles

The name of the movement is "Ecoshift"; the name of this book is "ECOSHIFT".

Italic text generally indicates my personal opinions, which may not be widely accepted or stated by others. Italics are also used for Latin words. Within quotations, *italics* used for emphasis by the original author are indicated by (ital. au.).

Bold face is used for my emphasis.

Underlining is used to indicate either an author of a book listed in Appendix 1 or a web site listed in Appendix 2.

> Boxes are used to illustrate my personal practices and actions.

Versions

ECOSHIFT was written originally in HTML and can be found on the World-wide Web at www.ecoshift.net. The web pages contain many internal links among chapters and external links to other web sites.

A PDF version may be downloaded from the web site (2.6 Mb) with two pages per sheet to save paper when printing. Internal and external links will not work.

For readability, durability, and portability you still can't beat a book! This hard-copy version of ECOSHIFT has been printed in limited quantity for outside review. The response will determine whether it warrants outside editing, publication (ISBN), and publicity. Please e-mail cheers@ecoshift.net with comments and encouragement.

Acknowledgements

My wife, Suzanne, has continually supported the changes that Ecoshift has induced in our life-style, and has suggested numerous text improvements. Many thanks to Marina Shauffler for her "Ecofeminism and Deep Ecology" seminar in 1995, which started me on the Ecoshift path. Neighbor and fellow Unitarian-Universalist Diane Woods brought me to a "Deep Ecology" study group and co-led with me a mini-conference

"Toward an Ecocentric Humanity"; she has stimulated my progress with her enthusiasm through the past decade. I have been particularly inspired by two magazines, Wild Earth (no longer published) and Resurgence, by the writings of Thomas Berry and Brian Swimme, and by the group study guides of the Northwest Earth Institute. I would also like to thank participants in several Earth Institute groups, authors of dozens of books, and masters of hundreds of web sites for all their *sine qua non* contributions to ECOSHIFT.

Introduction: Why ECOSHIFT?

"Our first responses to environmental degradations in the 1970s were legal and technical, but we have found them wanting. Although perhaps necessary, they are not sufficient. The earth's ecological deterioration is at heart a matter of human attitudes toward the earth and life in general. An ethical response is vital. And the needed ethical response must be rich and full, touching every level of our being, one that addresses what we consider to be of ultimate importance in our lives and how we think we ought to live, one that reflects morally on how we understand and relate to nature." – Calvin B. DeWitt ["A Contemporary Evangelical Perspective". In Carroll *et al.,* "The Greening of Faith", p. 88].

"Never has it been more important for humans to realize that we hold the future in our hands and that we have a choice about what kind of future it will be. The choice is in how we see the world and envision the future, for that worldview and vision will shape the reality to come, This has always been true, but the understanding of this truth has only begun to dawn on us. We must take back the power we have projected onto external authorities (God, government, corporations, parents, bosses, etc.), and assume the responsibility that is truly ours for our current and future reality." – Suzanne Duarte

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Humanity now demands more from Earth's ecosystems than Earth can supply. We are finally waking up to the fact that our human impact on Earth cannot be sustained. This book describes a multi-faceted grassroots movement that promotes change both from a global consumer culture to a sustainable Earth community and from an anthropocentric worldview to an ecocentric worldview. Paul Hawken calls it "the movement without a name". Joanna Macy calls it The Great Turning. I call it "Ecoshift" because the change in worldview involves a paradigm shift in the relation of humanity to Earth, our home.

This book, "ECOSHIFT", describes the breadth and depth of the movement, partly from my personal point of view. My goals are to help you to joyfully modify the way you live, to make you feel that you are not alone in your practices, concerns, and beliefs, and to help reduce human impact on Earth and on all the beings that live on it.

A great debate is beginning about the kind of future humanity wants for Earth. Great debates about the future of civilizations are nothing new, as witness texts from the world's major religions. But for the first time in Earth's history the debate has become global. Human industry has become globalized by international corporations that apparently aim to control everything and everyone on Earth. That same human industry is causing rapid global climate change that will affect everyone and everything.

We are living in a time of both great fear and great hope. Fear of accidents, terrorism, murder, child molestation, and war dominate our television and printed news. Concern is intensifying about the world-wide consequences of running out of oil and of global warming. Poverty and population continue to increase while food supplies are beset with questions about impoverished soils, pesticides, and genetic modification. Some people see globalization of the consumer culture as the solution, while others see it as a great threat. Unfortunately it is easier to become immune to bad news than to be concerned about it, and easier to complain than to do anything.

On the other hand, more and more of us are becoming aware that major changes must be made, and made soon, in the relationship of humanity to Earth. We are realizing that our current human activities are not sustainable. We are beginning to recognize that we depend completely on the continued functioning of a natural system, which we had absolutely nothing to do with producing, but which we are continually messing around with and messing up.

There is a movement afoot that rarely makes the evening news. This movement is being led by individuals and small groups, not by governments or corporations. It is a multi-faceted movement that seeks to define, describe, and promote changes in both human behavior and in human beliefs and ethics. Participants in the movement, which has no generally accepted name, realize that our technologies, our food production, our global economy, our consumer life style, and our huge population are all based on exploitation of poor people and countries and on rapid consumption/destruction of living systems and Earth's minerals. They realize we are destroying other species of life at an unprecedented rate, without understanding how we and other life forms may depend on those species and the ecosystems in which they function. They realize that global corporations are intent on exporting our unsustainable culture to the rest of the world. And these people are beginning to realize that their personal choices, their own decisions, can and do make a difference.

The movement occurs on many levels. Individuals frequently come into the movement through some particular special interest, such as

recycling, peace and justice work, or protection of land or species. With increasing awareness of links among the many aspects of the movement, individuals begin to make choices to consume less, to live more simply, and to not join in the corporate money game. As awareness deepens, these individuals come to realize that they and the movement need some kind of psychological, intellectual, and spiritual faith in order to sustain their participation. Joanna Macy [1997. "The Great Turning". Earth Matters (newsletter of the Northwest Earth Institute) 4(4):1-2] describes The Great Turning as "the epochal shift from an industrial growth society, depending on accelerating consumption of resources, to a sustainable or life-sustaining society." Success of The Great Turning apparently requires fundamental changes in the worldview of individuals and of society. I and many others believe that the change needs to be a paradigm shift from an anthropocentric worldview of humanity dominating and controlling nature to an ecocentric worldview of humans as one component of Earth's ecosystems.

Since humanity learned agriculture about 10,000 years ago, the dominant paradigm in human societies has been anthropocentric. Anthropocentrism puts humans at the top of a pyramid of all Earth's beings and non-beings. Anthropocentrism believes that Earth consists of "natural resources" for humans to use as they see fit, and of ecosystems that humans can modify in any desired way. Anthropocentrism has created a culture of dominance and suppression, a culture that believes that power and control are the most desirable goals in life, and a culture with egocentrism and intolerance as its focus. The dominance and cultural control formerly exerted by kings, their military, and their state religion are now in the hands of huge global corporations (and the military of the governments they control). This culture springs from an optimistic, humanistic belief in the power of human reason and knowledge.

In science or society a fundamental change of belief structure or worldview is called a paradigm shift. The paradigm shift of The Great Turning is a shift from a capitalist culture controlled by the power of money to a culture based on concepts of cooperation and sufficiency within an Earth community. However, if that is all it is, a new paradigm could continue to be anthropocentric. In other words, human individuals and culture could remain as the primary focus, even as humans are learning to live "sustainably" within Earth's systems. Many proponents of the movement believe that the paradigm shift must be deeper, that it must be ecocentric. Ecocentrism states that Earth and its systems are not here for humans to do with as they will. Ecocentrism removes humans from the pinnacle as the final result of Creation, and re-places them back into the incredibly complex Earth system in which they evolved. Ecocentrism states that humans must learn to live within a stable, sustainable, self-renewing ecosphere, and that humans are just one component of an ongoing process of Creation on Earth. Ecocentrism teaches respect for all components of Earth and for the Universe that gave us life. The

"Manifesto for Earth" on the Ecospheric Ethics web site provides a good overall statement of ecocentrism. Aidan Rankin, in "The Jain Path" [p. 52], sees even more deeply that "thoughtful Western men and women are seeking a change of consciousness, a 'paradigm shift' as it is sometimes called, in which pure reason is balanced by intuition, giving it new depths, or to return to the neurological metaphor, the direct and linear left side of the brain is reconciled with the vague but more rounded right."

I propose the term "Ecoshift" to describe this paradigm shift and the movement that is leading toward it. I will also coin the word "ecoshifter" for someone who believes in the practices of and the need for Ecoshift and is in the process of "ecoshifting". In this book, ECOSHIFT, I will describe the many aspects of Ecoshift and why they are all linked together. Hopefully ECOSHIFT will help individuals to see that they and their choices are part of a larger movement that may in the future change the direction of human development and evolution.

It is important at the outset to realize several things:

- Participants in the movement do not necessarily believe in the need for ecocentrism.
- No effort that moves individuals or groups in the direction of the Great Turning or Ecoshift is insufficient or unnecessary.
- Ecoshift is not going to happen soon, but each of us can help it happen sooner.
- You **can** enhance your enjoyment of life at the same time as you reduce your adverse impact on Earth.

Humanity has always had its dreamer philosophers, its spiritual prophets, its visionaries, who look beyond the "what is" to the "what could be". They are the pioneers, the vanguard, who show the way. Ecoshift outlines a dream for the future, an old and renewed desire for a mutually-enhancing rather than a destructive relationship between humanity and the natural world. Each of us has a choice to be a dreamer and lead the way to a new, happier, life, or to be a follower and chronically complain about the way things are going.

Why Another Book?

The number of books that cover various components of Ecoshift increases rapidly. Although perhaps not the first, Thomas Berry's "A Dream of the Earth" from 1988 remains a bible of the movement. The 1992 novel "Ishmael", by Daniel Quinn, provided a readable introduction to the basic concepts of ecocentrism. In 1993 Ted Roszak drew together the various threads of deep ecology, Gaia, ecofeminism, and ecopsychology in "The Voice of the Earth", but it is not an easy read. Connie Barlow writes a much more personal account of conservation biology, the Universe Story, Gaia, deep ecology, and ecospirituality in "Green Space, Green Time".

David Korten's 2006 book "The Great Turning: From Empire to Earth Community" traces the development of the anthropocentric "Empire" paradigm and then describes what "Earth Community" would look like after The Great Turning. Paul Hawken provides another overview of the movement in "Blessed Unrest: How the Largest Movement in the World Came into Being and Why No One Saw It Coming", which documents the many pathways taken by thousands of small organizations in "the movement without a name". Few of these books are written from a personal viewpoint and the recent Korten and Hawken books say very little about the necessity (or not) for an ecocentric paradigm or Ecoshift.

The need persists for a more comprehensive book that both incorporates all components of the movement and speaks from a personal point of view. At a conference called "The Go(o)d in Nature and Humanity" held at Yale University in 2000, several participants wondered who would write "The Book" that covered the whole movement that was the purview of the conference. That discussion provided my primary incentive for writing this book.

ECOSHIFT views the movement from the ground up rather than the top down. It tries to cast a lot of different hooks in order to catch a lot of different people and get them interested and involved. It suggests a lot of different ways to encourage individual change, because without individual change there can be no societal change. It emphasizes that the nature of a society is the consequence of many small decisions made by millions of individuals each day, that society is what you and I make it by our daily life. And it describes a personal odyssey and set of beliefs as well as personal actions and change.

I freely admit at the outset that I am not a wordsmith. My mind is bent toward science, toward facts, toward information sources, toward rationality, and the left side of my brain. You will have to read some of the many other writings I mention in ECOSHIFT to find the poetic, the romantic, the intuitive, and the eloquent ways to express ecocentrism.

I also freely admit that the subject area of this book is vast and is changing rapidly. There is no way I can claim to be comprehensive, and informed readers will certainly find significant thoughts and deeds that I have omitted or overlooked. ECOSHIFT is but one person's view and one person's project. This is not a book about all the specific actions you could take to become greener; I can't cover them all and my purpose is deeper. Ecoshift concerns fundamental thinking, not just personal behavior.

ECOSHIFT is divided into four sections. Part 1, "The Current Rule of Global Capitalism", briefly discusses the current situation. There are many other books that thoroughly describe the problems of humanity and its impact on Earth systems so this part is limited to comments and facts that are not yet widely recognized. The remaining three parts of the book describe changes that are currently being made or hopefully will be made in the future. Each part roughly corresponds to a different level of social and personal action. Part 2, "Changing Personal Lifestyles" describes

various efforts by individuals and communities to change their living practices. Part 3, "Changing Human Culture", includes broader social actions to modify human-human and human-nature relationships. Part 4, "Changing Human Spirituality" includes philosophical, ethical, spiritual, and religious bases for altering the relation of individual humans and all humanity to Earth. Recognition and acceptance of an ecocentric belief system is the core and the motivator for personal and societal change.

Semantics

Meanings of words are important. If you and I don't agree on the meaning of a word there is miscommunication or failure to understand. Here are my intended meanings for some common ECOSHIFT words, though I don't guarantee that I've always used them this way.

Mark Meisner ["Key Words of Conservation and Environmental Discourse", Wild Earth, Winter 1993/94, p. 75-81] discusses the meanings of "conservation", "preservation", "protection", "environment", "ecology", "nature", "wilderness", and "wild". Many of these words have so many different interpretations that they have become almost meaningless. I will use "conservation" in a very general sense to mean some kind of concern for both natural and wild beings and ecosystems without necessarily implying "for human use". I use "preservation" in a sense of keeping or maintaining in a wild state, that is, essentially free from human activity. "Protection" implies some specific human activity or human-imposed restrictions in order to maintain specific species or systems.

"Environment" means the physical, chemical, and biological properties and processes that surround and affect an organism or group of organisms. It is a relative term; it has no meaning without specifying the object(s) to which it applies. When "environment" is used implicitly with respect to "humanity" it implies a separation of humanity from its non-human surroundings and is thus an anthropocentric term. "Environmentalism" then implies concern for all the physical, chemical, and biologic surroundings of humanity; it too is an anthropocentric term that suggests that we can control and dominate our surroundings, but just need to do a better job of not destroying them.

There should be little disagreement about what constitutes "humanity" and what is "human". Separation of humanity from "nature" is inherent in an anthropocentric worldview. After some thinking about this I will retain the convenient separation of humanity and "nature", such that "nature" is the part of the biosphere that is non-human. Consistency then demands that "natural" be defined as "non-human" or "other-than-human" in general, and not with the more limited sense of "free from human influence". An agricultural field thus could be considered as "natural" and a part of "nature". For the alternative implication of relative freedom from human influence, I will specifically use "wild". I will try to use "wilderness" to refer only to areas so designated by governments.

My old Webster's New International Dictionary, 2nd ed. [1959], defines "wild" as "living in a state of nature, inhabiting natural haunts, not tamed or domesticated", and "growing, produced, or prepared, without the aid and care of man". It lists synonyms as "savage; untilled, uninhabited; barbarous, barbarian; tumultuous, riotous; unruly, obstreperous, uncontrollable; chimerical, irrational; uncertain, aberrant". Antonyms are "tame, domesticated; cultivated; peopled, settled; civilized, cultured; calm, orderly, restrained; sensible, practical, reasonable, pragmatic; direct, controlled". *I cannot imagine a better example of the imperious anthropocentrism of the mid-20th century!*

An ecocentrist, and Ecoshift, would like to put humans back into nature. In English we use the noun "ecosphere" to connote the combination of the human world and the natural world, of humanity and nature, and the prefix "eco-" for the same concept. "Eco-" comes from the Greek *oikos* meaning "house", so "ecology" is the study of relationships between organisms and the environment, or the "house", that they live in. "Ecology" is the name of a science, not a synonym for "environment" or "ecosystem", *so the oft-used term "the ecology" makes no sense.*

Depending on context "we" and "us" will mean either humans in general (humanity) or humans with moderate to high annual income, especially in the United States.

My Personal Background

I grew up in a family that spent a lot of time outdoors: hiking, camping, gardening, skiing, and cutting wood and trails. My parents taught me about birds and stars and took my sister and me on business trips that always included National Parks and Forests. In high school I decided to study forestry. In college I narrowed my interest to forest soil and water, and then spent my career as a scientist with the U.S. Forest Service. For more on my science see my personal home page at www.ecoshift.net. I was raised by my parents as an atheist and since college have been associated with Unitarian-Universalist churches. In the 1960s I realized the necessity for radical action in order to promote social change. By Earth Day 1970 I was involved with speaking and writing about population growth, but my energy was gradually drained by years of anti-progressive government.

Just after retirement in 1995 I audited a University of New Hampshire seminar titled "Ecofeminism and Deep Ecology". I learned that my beliefs about the relationship of humans and nature were not unique and individual. I subsequently discovered the study courses of the Northwest Earth Institute, and began

considerable reading about the Ecoshift movement. I organized a small conference called "Toward an Ecocentric Humanity" held June 28-July 5, 1998 at the Ferry Beach Park Association in Saco, Maine. I developed a web site called "TF's Ecocentric Pages" in response to requests by friends for more information. That now dead web site has developed into ECOSHIFT.

PART 1 – THE CURRENT RISE OF GLOBAL CAPITALISM

Where We Are Now: A House of Cards

"The harsh unpalatable truth as of now tells us that the majority of people in the rich world are broadly content with our greed-driven society." – Jonathan Porritt [Resurgence 235, p.18]

"[Since 1946] there have been steady *decreases* in the percentage of Americans who say that their marriages are happy, that they are satisfied with their jobs, that they find a great deal of pleasure in the place that they live.... *Money consistently buys happiness right up to about $10,000 per capita income,...after that point the correlation disappears* (ital. au.)." - Bill McKibben ["Deep Economy", p. 36]

ECOSHIFT will not dwell long on the problems that humanity and the Earth are facing; they have been thoroughly described in many other places for anyone who is sensitive enough to be aware. For instance, Ed Ayres, in "God's Last Offer" documents the four rapidly rising trends of carbon dioxide, consumption, species extinction, and population, together

with the immense control of people's lives by megacorporations. Here I only need to point out the really significant issues and make some comments on them in order to demonstrate the necessity for The Great Turning and for Ecoshift.

Energy

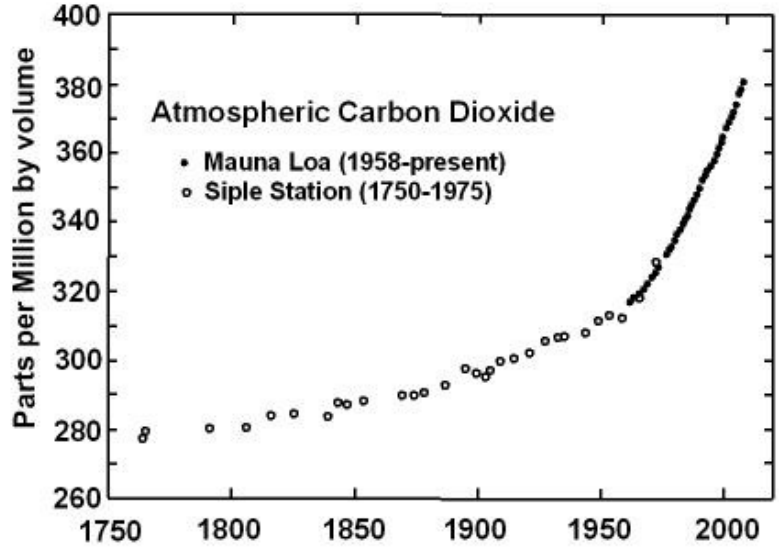
In only the past 100 or so years humanity has produced a long list of formerly unbelievable things that billions of us now take for granted: automobiles, radio and television, satellites, airplanes, electric power, heated and air conditioned homes and workplaces, food from around the world, cell phones, the internet, and on and on. In this same one hundred years humanity has burned up half of Earth's fossil oil, oil that took the whole 5 billion years of Earth's existence to create. The energy required for our current way of life in the United States and many other countries comes mostly from oil. Half of this oil is now gone, and we are burning through the second half at an even faster rate.

The dependence of the very core of human society on energy from oil means that our current affluence is a house of cards. There is a very real possibility that as oil runs out, the house of cards will come tumbling down. Major changes in how humans behave will be required; major choices will need to be made. ECOSHIFT discusses how some people and groups are already making changes, hoping to show the way to a new and better world. On the other hand, there is a good possibility that humanity will postpone facing its problems until it is too late, with extremely seriously consequences. We are already seeing that rich nations are willing to go to war in order to maintain their oil supplies.

I will return to the subject of energy later in the Energy Choices chapter.

Climate Change

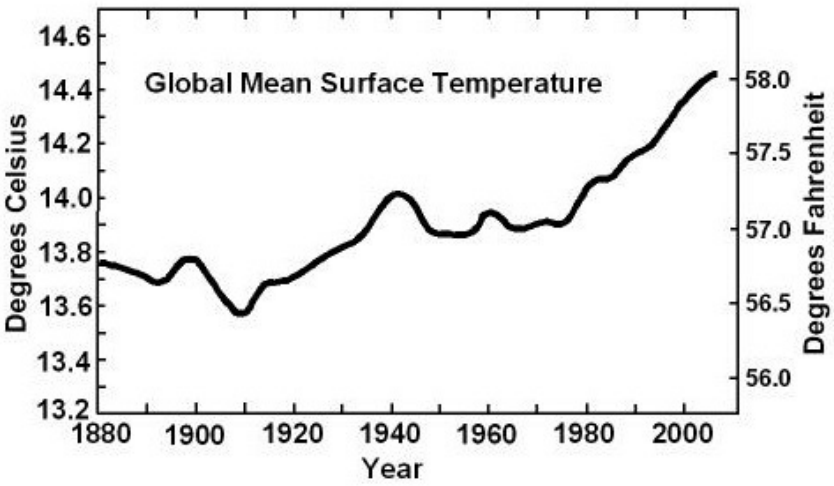
An even bigger, and closely related, problem is global climate change. All our burning of oil, natural gas, and coal to fuel our vast energy wants converts the carbon in the fuel to carbon dioxide. It's the burning or oxidation process that releases the energy stored in the organic fuel molecules. The carbon dioxide (CO_2) goes back into the atmosphere, where it came from many millions of years ago. The graph shows how the CO_2 concentration in the atmosphere has risen over the last 250 years: This rise in CO_2 is affecting the energy balance of Earth's atmosphere and surface by what is called the “greenhouse effect”, causing the temperature of Earth's atmosphere to rise.



Because of its importance, I'll describe how the so-called “greenhouse effect” works. (Note: that name is really a misnomer because the warmth of a greenhouse is caused more by the glass or plastic keeping out colder air than by the radiation effect that is described here.) Two kinds of radiation, or radiant energy transfer are involved. Solar radiation comes from the sun and is about half “light” that our eyes can see and half near infrared radiation that we can feel as heat but cannot see. The other radiation is “terrestrial”, “longwave”, or “far infrared” radiation that is emitted by all atoms at the Earth's surface or in its atmosphere, including you and me. (This is like the radiant heat from a hot electric stove, which we see part of as red light.) The atmosphere and Earth's surface absorb most of the solar radiation that reaches Earth; the rest is reflected into space. The absorbed solar radiation warms the Earth and us. But at the same time, Earth's surface and atmosphere are emitting longwave radiation into space. In order to keep the temperature of the atmosphere constant, the gain of solar radiation from the sun must be exactly offset by the emission of longwave radiation into space. The atmosphere and the air we breath is mostly made of nitrogen and oxygen molecules, which are transparent to both solar and longwave radiation and play little role. However, other molecules in the atmosphere, especially carbon dioxide (CO_2), water, and methane, absorb and emit radiant energy. Change in their concentrations changes the transmission of longwave radiation through the atmosphere and thus the emission of longwave radiation from Earth. Rising concentration of CO_2 (and methane) means that more of the longwave emission from Earth's surface is absorbed by the atmosphere and reradiated back to the surface. This reduces the amount of longwave

radiation emitted into space and causes the atmosphere and Earth's surface to warm.

So rising CO_2 means that air temperature is going up.



Very serious climate and weather changes are in store for us as a result of our fossil fuel burning, but our recognition of the severity of the issue has been slow in coming. Ross Gelbspan pointed out in "The Heat Is On", that through the late 20th century the media, which loves to present all issues as 50-50 splits between two sides, repeatedly quoted the same handful of scientists who denied anthropogenic global warming in contrast to the thousands of scientists who accepted it as fact and urged action. Two eight-year Presidential administrations, both Democratic and Republican, largely ignored the issue. Before he ran for Vice- President, Al Gore wrote "Earth in the Balance", a good account of the global warming problem. *Then as Vice-President and Presidential candidate he said virtually nothing about it.* Only since leaving politics has he produced an excellent film on all the climate effects that are likely to happen, An Inconvenient Truth, for which he won a Nobel Peace Prize. The denial of the issue by the Bush administration is documented by Mark Bowen in "Censoring Science". Finally by 2008, the twin problems of rising temperature and declining oil have generated public discussion and initial responses.

Climate is warming in general, and particularly in the Arctic. Winters are shorter, glaciers are melting, permafrost is melting, Arctic ocean ice has lost 40% of its volume and 15% of its area since the 1960s. Throughout North America ice cover on lakes forms a week later and melts a week earlier than 50 years ago. In my Gulf of Maine bioregion winter outdoor recreation (skiing, snowshoeing, snowmobiling, ice fishing) is endangered and fall foliage color may be threatened. Predicted future

temperatures change the climate of my home city, Boston MA, to the 20th century climate of Washington DC or even Atlanta GA. Optimists believe that humans are smart enough to adapt and adjust without major problems, but Hurricane Katrina was a warning that more pessimism is warranted. The most worrisome possibility is that changes will not be gradual, but that one or more thresholds may be crossed that create very rapid change. The West Antarctic ice sheet is grounded below sea level and could melt rapidly, thus quickly raising sea level by as much as 5 meters (15 feet). Warming in the Arctic may cause the Gulf Stream to shut off suddenly. The result probably would be very rapid cooling of Europe and warming of eastern North America. *How many other thresholds are there that we do not understand?*

Consumerism and Globalization

"Buy, Buy, Buy." That is the message that comes at much of humanity many times a day. Originally this was just a message for the affluent, those in so-called "Western" cultures or "developed" countries. Now, especially since the collapse of communism as an alternative, capitalism, and its support base, consumerism, are taking over the Earth and the humans on it. The United States leads the way. Consumer spending accounts for about two-thirds of all economic activity in the United States. Although, as Bill McKibben points out in the quote at the beginning of this chapter, having two or more cars per family, big-screen high-definition TVs, taking frequent long airplane trips, building larger and larger houses for fewer and fewer occupants, and needing storage lockers to hold all our stuff, has not made us much happier. Yet megacorporations are now trying to export this kind of economics around the world. The next chapter, Globalization, delves further into what David Korten calls the corporate "Empire" and its view of the future.

Globalization creates many problems:

- "Buy cheap" seems to be a mantra of the consumer culture. But in the new world of corporate globalization, low prices mean that many people involved in producing and selling something are being underpaid. Most goods are now made in the poorer countries of the world, where the workers can be paid the lowest wages possible. Sales people are underpaid and overworked. *We need to start realizing that "cheap" means that somebody, someplace, is getting ripped off.* This issue is taken up again in the Socially-responsible Investing chapter and the Ecojustice chapter.
- Globalization involves world-wide transportation of goods. Food, raw materials, parts, and products are transported thousands of miles before they reach the buyer. This transportation is based on oil and thus is part of the house of cards. More on transportation is in the Energy chapter and the Food chapter.

- Much of the production of the "consumer" culture is not consumed at all, but becomes trash, which is a problem to get rid of. Waste disposal is a major problem that is discussed further in the Three R's chapter.
- The global consumer culture requires huge amounts of minerals, energy, and land for food and fiber. Separation of the geography of supply of these Earth services from the geography of their consumption enables a disconnect of the consumer from the environment of the producer. Consumers know little about the sources of the goods they consume and care little about the land and people that produce them. The consequences of this problem are discussed further in the Ecojustice chapter and the Conservation Biology chapter.

The message is finally getting across to some corporations that the consumer culture as it now operates cannot be sustained. The time is coming soon when it will have to change. I'll take up this again in the Sustainability chapter.

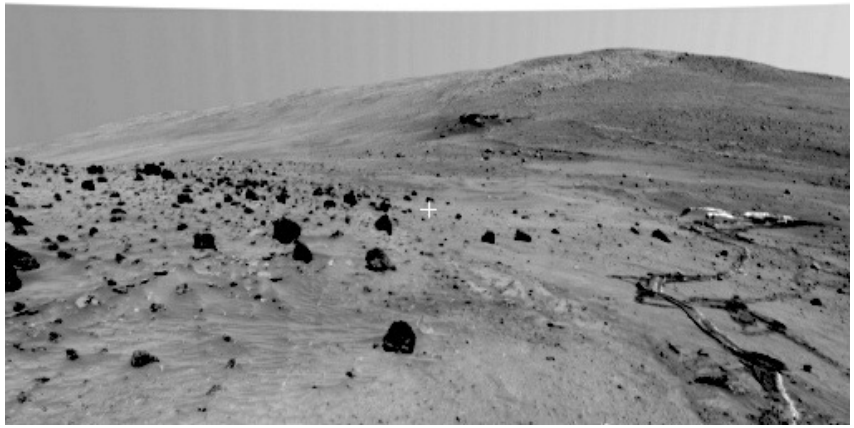
So-called "Natural Resources"

What the consumer culture really does consume are so-called "natural resources". Non-renewable "natural resources", such as oil, coal, iron, aluminum, copper, and other metals, limestone, and gravel, all require messy mining operations and many are being locally or globally depleted. Renewable "natural resources", such as water and forests, are also being depleted. Agricultural soil is being depleted. In all these cases, as the resource gets scarcer, only the more affluent get what remains, and the rest of humanity is left to do without.

The term "natural resources" describes all those materials that are supplied to humanity by Earth's systems. The term is anthropocentric because it implies that all of the natural world exists for humanity to make use of. We will see toward the end of ECOSHIFT, especially in the Deep Ecology chapter, why ecocentrists like me do not like to use the term. However, there is not yet a good ecocentric replacement that is widely understood, so I put "natural resources" in quotes when I feel obligated to use it. A term along the lines of "Earth's bounty" is needed.

Ecosystem Destruction and Species Extinction

Prior to the advent of humanity, and especially prior to development of agriculture about 10,000 years ago, Earth's ecosystems were the results of billions of years of evolution, or, if you prefer, creation. In general, these systems changed slowly; even a rapid change would be measured in millennia. Ecosystem stability and complete internal recycling have been and still are characteristic of the pre-agricultural/industrial wild.



Permanent destruction of a natural landscape by an off-road vehicle!

Now, most of the Earth's surface has been modified by humans. (We are even extending this damage to extraterrestrial surfaces!) Agriculture and forestry have destroyed whole ecosystems. At a more local scale, land and related water systems have been badly damaged by mining. Some species of plants and animals have been harvested by humans to the point where the species is nearly or completely wiped out. Many other species have been severely affected, perhaps in unknown ways and by unknown amounts. We are in the midst of one of the Earth's great extinction crises. This one is caused by us. It is fair to say that humanity has destroyed in a few years what creation took billions of years to create.

In addition, humans have for centuries transported species from one place to another and from one ecosystem to another. An "invasive exotic" is a plant or animal species that was not originally present but is becoming a dominant feature of an ecosystem. Ecosystems. extinctions, and invasives are covered further in the Conservation Biology chapter.

Speaking as an ecosystem scientist, I can say that we know precious little about how ecosystems operate. Yet humans are dependent on these systems not only for the basics of food, fuel, water, housing, and health, but also for the many frills of affluence. We manipulate or unintentionally alter systems that we only superficially understand. Biological systems are exceedingly complicated. Many different components interact in many ways. So we do not and possibly can not know what long-term effects will be produced by the addition or removal of any given species or the alteration of physical and chemical characteristics. We are messing with the products of evolution/creation and we don't know what we are doing.

Population

The population of the United States is now over 300 million and is increasing by well over 3 million every year. *This increasing population in the world's most affluent country will try to increase its share of Earth's products. We are already seeing buildup of military power to ensure that we are able to do this.*

World population is now 6.3 billion and is increasing by 80 million every year. In spite of some reduction in birth rates, world population will increase by at least another 3 billion and hopefully, though not assuredly, will be stable after that. Globalization is encouraging all peoples to desire a more affluent standard of living. But Earth is already overtaxed; Earth systems cannot support affluence for billions. The Population chapter and the Sustainability chapter examine this controversial issue in more detail.

These are just some of the world's problems that relate to humanity's current presence and role on Earth. The role of Ecoshift and ECOSHIFT is to describe possible paths to solutions, recognizing that the problems are so pervasive and deep that fundamental changes will be needed.

Globalization: Dominance of Corporate Empire

"To the editor:

I thought the announcement and ad by Jerry's furniture this week to be not only succinct and poignant, but it speaks well to the fact that Americans actually vote with their dollars, sometimes more effectively than in the ballot box. Jerry's supplier lays it out: Americans must realize that by continually basing purchases on cheap prices, which favor foreign goods, it costs an American community, somewhere.

I'd like to remind folks that once upon a time our government shielded workers from "unfair" foreign competition. How fair is it to be a worker in China being paid 50 cents a day, zero if they are a political prisoner? How fair is it for a Malaysian village to have the teak forest stripped bare around them? How fair is it to Indian men, women and children to be poisoned by industrial waste? Simply so that we Americans can purchase cheap goods?

In removing the barriers to "free trade", not only has this country watched as literally millions of jobs disappeared out from under you and your extended families, we are also witnessing the wholesale destruction of the planet by the very corporations who benefit financially and, coincidentally, at one time employed our citizens. These corporations have become so powerful to overshadow portions of otherwise sovereign nations. The race for profits has become so relentless that nothing, even human lives, will impair the bottom line.

America, wake up! We vote with our dollar. Think before you buy that meaningless piece of plastic made in China that will be thrown out after one use. Support local craftsmen and locally owned stores, and plant a garden. It's our future; invest in it." – Maureen Westrick [Letter to the Editor, Conway NH Daily Sun, Feb. 27, 2007].

The word "globalization" has two different meanings that carry opposite connotations. It can mean development of a global community in which fairness, equality, diversity, and sustainability are valued and accepted. Or it can mean the dominance of Earth's politics and economics by global megacorporations. Unfortunately, the second meaning has become the dominant one, and I will use it here. In the context of Ecoshift, equating of "globalization" with corporations and capitalism carries a negative connotation.

The "Success" of Capitalism

The "victory" of capitalism over communism has merely prolonged centuries-old imperialism. The empires now are global megacorporations, which are supported by the United States government and its military power. A major part of David Korten's 2006 book "The Great Turning" documents the millennia-old history of Empire that has led to dominance of global corporations.

Corporations were originally and still are licensed by governments to conduct business. In the United States this licensing power is held by the individual states and is only granted for a few years at a time. State governments have the legal power to withdraw corporate licenses, or to not renew them. But over centuries, corporations have gained political and thus legal power. In the United States much of this power can be traced to Supreme Court decisions that corporations have all the same constitutional rights as individual citizens. Over time, efforts of workers to limit corporate power via trade unions and efforts of governments to limit corporate power by anti-trust or anti-monopoly actions have been overcome by corporate power.

However, corporations that produce consumer products remain subject to the financial power of their customers. If no one buys a company's product the company will soon be out of business. Corporations fight against this power by advertising. When people believe advertising and consequently buy products, they contribute to corporate power. However, we should not blame the corporations or the government. As Pogo said: "We have met the enemy and he is us." Intentionally or not, we support corporate empires every time we buy their products. The Voluntary Simplicity chapter will discuss how to take back some of the power that we currently hand over to corporations.

The worldview of perhaps a majority of world population, of the governments of most if not all affluent and some poorer countries, and of most corporations, large and small, local or global, now is a capitalistic one. Under capitalism the sole objective of corporations is to make the most possible money for their owners. And even though some of this ownership is now in the hands of the middle class, it is still the already

wealthy that are in control. This worldview believes that as the "economy", or turnover of money, grows, enough wealth will be generated to keep the poor happy and the middle class consuming. This worldview so dominates humanity now that it is being exported as rapidly as possible to most of the countries of the world. Unfortunately, the end result seems to be that the rich get richer, the poor get poorer, and the middle class gradually disappears.

Although "corporate greed" is often stated as a basic problem for an overexploited Earth, it is not just the greed of corporate executives, but the greed of corporate stockholders (owners) that is more fundamental. These are those millions of individuals who directly through their stocks and mutual funds, or indirectly through their pension plans, want to maximize their profit (return) regardless of side effects. Once again, "we have met the enemy and he is us." Everyone with investments bemoans each stock market decline, usually without recognizing that it connotes a reduction of many adverse impacts on Earth. *Even I have a negative reaction to a declining stock market though I know it's a good thing.* For more on alternatives to unbridled maximizing of profit, see the Sustainability and Socially-responsible Investing chapters.

Two classic books, Paul Hawken's "The Ecology of Commerce" and David Korten's "When Corporations Rule the World" delve much more deeply into problems of corporate globalization. For more on corporate imperialism (if you haven't read or heard enough already), see Arundhati Roy's article "The New American Century" [The Nation, February 9, 2004]. If you are interested in pursuing the subject in more detail, you can get a group of friends together and use the Northwest Earth Institute study course on "Globalization and its Critics."

The corporate worldview is based on several unsustainable and even immoral premises:

- "Natural resources" are abundant;
- or if they are not, technological substitutes will be found.
- Fuel is abundant and cheap.
- Lower wages mean higher profits.
- Growing population means more cheap labor.
- Growing population means more buyers.
- Disposal of products and byproducts is not a problem.
- Taxpayers should pay for adverse side effects.
- Governments should support corporations;
- even if it takes military power.

Ecoshift takes issue with **all** these premises and suggests an alternative worldview.

A great deal of the cost of the corporate worldview has been and will be indirectly paid by the general public through taxes. The rapidly

escalating American national debt represents a cost that will eventually be paid by future generations, either through increased taxes or by inflating away its value. Big recent increases in this debt have been created by bank bailouts (Savings and Loan banks in the 80/90s and Bear-Stearns/AIG/Lehman Brothers in 2008, by corporate bailouts (Chrysler Corp in 1980 and more), and by big oil wars, most notably the so-called "war" in Iraq. The public also subsidizes airlines, the trucking industry, agricultural giants, drug companies, and on and on.

The Problems with Megabusiness

Lots has been written about Wal-Mart and its negative effects on local business and communities. "How Wal-Mart is Destroying the World" by Bill Quinn and wakeupwalmart.com document these effects. Wal-Mart is no longer included in lists of acceptable socially-responsible investments (see the Socially Responsible Investing chapter). Wal-Mart runs roughshod over local zoning and local resistance to its megastores. Each new Wal-Mart drives many local stores out of business. Wal-Mart makes their cheap products in overseas sweatshops. Wal-Mart bought life insurance on its employees with the company as beneficiary and gets a tax deduction for it! Wal-Mart now controls 10% of all retail sales in the United States. The annual income of Wal-Mart (and of other megacorporations) is larger than the annual income of the governments of nearly every country on Earth.

Opposition to chain stores in the United States is nothing new. In 1930 the national high school/college debate subject was "Resolved: That chain stores are detrimental to the best interests of the American public." They were seen as a threat to independent local economy and to community because they siphoned money from the area and created absentee ownership. The chains immediately counter-attacked with the now-familiar message that low prices were the primary goal of consumers. That winning argument has produced global megacorporations.

Wal-Mart is just one of the many megacorporations in the big-box retail business that are exporting the "low price" argument to the rest of the world. Stacy Mitchell's "Big Box Swindle" discusses Target, Lowes, Home Depot, Staples, and more as a group. While practices differ some, they each are trying to capture as much retail business as possible. Mitchell and others have shown how local businesses suffer when big-box stores open. *I got a wrong number yesterday reminding me of my appointment at Wal-Mart Vision Center; they even want to drive the local optometrists and opticians out of business.* The big-boxes start with low prices to undercut local businesses, then raise prices when the locals have disappeared and the customer base has been built. The end result is more workers and fewer owners, thus increasing the gap between fewer richer owners and more poorer workers. More money leaves the local community instead of recirculating within it. The "Andersonville Study" of 2004

showed that for every $100 spent in local businesses, $68 stayed in the local economy, whereas only $48 of $100 spent in national chains stayed local. In big-box stores, worker salaries decrease, job security is lost, medical insurance is questionable, and unionization is strongly discouraged. The close relations between customer and owner is lost and in-store service declines because the sales-persons know less about what they are selling. *The trend is ultimately to only a single store providing all a consumer's needs, a return to the "company store" of the nineteenth century - no choice and lots of credit indebtedness.*

Although big-box stores form the core of many shopping malls and strip developments, it is automobiles, not megacorporations, that have caused the demise of downtown shopping. Negative aesthetics and traffic issues involved in strip development are much discussed, and are controlled by some local governments. Governments are less able to deal with the fact that proximity to shopping malls and big-box stores reduces the value of nearby housing, whereas vibrant downtowns add to the value of nearby housing. And what benefits accrue to the community when local governments provide tax incentives for mall development then later are left with empty stores as corporations either go bankrupt or build even larger stores nearby? Many of these hulks are stilled owned by the corporation in order to prevent purchase by a competitor.

In addition to issues with the local economy are the issues of sweat shops, child labor, poverty wages, and overseas production. *It seems as if nearly all the famous name manufacturers have been in hot water for one or more of these problems.* Millions of American (and European?) jobs have been exported to poor countries where stricter laws about working conditions and wages do not apply. Unemployment and poverty in the U.S. rise as corporate manufacturing goes elsewhere. This is driven, of course, by Americans' insistence on buying everything possible as cheaply as possible.

The last issue I will mention is the "environmental" one. Taking production out of the U.S. and other developed countries to poorer countries avoids the always stricter environmental protection laws of the affluent countries. Toxic waste disposal and toxic workplace conditions are far less regulated, saving the corporation lots of bucks. The news has been full recently of such things as lead in children's toys from China. Another side of the environmental problem involves the big-box stores ignoring local pollution and zoning regulations. Megacorporations have lots of money and lots of lawyers and over and over again have bulldozed (figuratively and literally) local communities into submission on issues of location, appearance, and access for big-box stores.

Corporations claim they are bringing jobs and money to the community when the reality is that more jobs are lost than are gained and more money leaves than comes in. Often the community is so bamboozled that it offers tax incentives, such as reduced property tax, to the big boxes, and forgets that it will have to pay for increased fire and police protection,

increased water and sewer use, increased wear on local roads, and increased waste disposal.

But all is not quite lost. Mitchell's "Big Box Swindle" documents innovative and often successful efforts of local communities to fight off big-boxes and redevelop a locally-owned economy. It can be done, but it takes a small group of committed citizens who understand and publicize all the negatives of big-boxes and megacorporations. Mitchell points out that when citizen opposition is sufficient to induce opposition by local government agencies, lawsuits by a corporation against local government almost always lose. Alternative, more positive approaches, include "Main Street" programs to revitalize local business districts and fostering locally-owned franchises and cooperatives like Subway or Ace Hardware. (Ace offers on-line shopping that is credited to the local store and can be picked up there with no shipping charge.) The Business Alliance for Local Living Economies (BALLE) encourages locally-owned businesses by networking through local chapters. Individual supporters of local ownership proudly display "Buy Local" bumper stickers on their presumably domestic-make automobiles.

Avoiding Big Box Stores

The only big-box store that I patronize regularly is Staples. So far I have successfully avoided ever setting foot in a Target, Lowes, Home Depot, or Wal-Mart store. I get some kind of phobia whenever I enter a huge supermarket; it must be the way some people feel about being lost in the woods – frustrated and disoriented. It takes an increasing amount of work to find things at small, and especially locally-owned, stores, but the rewards, both in better customer service and in self-gratification for fighting the system, are worth it.

Population Growth: Too Many Humans

"We humans have been relating to the ecosystem of planet Earth as if we were an alien species - the cancer tumor in the body of life - seeking our own unlimited expansion without regard to the consequences for the larger community of life on which our own existence ultimately depends. We must now learn what every successful species has learned before us: to live as members of cooperative living communities exquisitely adapted to the microenvironments of our particular place on Earth." – David Korten ["The Great Turning"]

"Recognizing that our [U.S.] population cannot grow indefinitely and appreciating the advantages of moving now toward the stabilization of population, the Commission recommends that the nation welcome and plan for a stabilized population." – {Report of the [Presidential] Commission on Population Growth and The American Future, 1970]

World Population

Population growth arises from many millions of individual decisions each year. The urge to become a parent is built into our genes, and the genes of every other living organism. Humans are the only species that has become capable of modifying virtually all of Earth's land, water, and air for our own use. We are also the only species, so far as we know, that can discuss how large its population ought to be and how many offspring we should produce.

Thomas Malthus is credited with being the first to point out that human population growth had the capability of out-running human food supply. Unconcerned people are fond of stating that Malthus was obviously wrong because there are now billions of us. The Green Revolution of the 70s and 80s greatly increased availability of food.

Cornucopians insist that there is plenty of food to feed everyone adequately if we would just distribute it properly. These optimists ignore the fact that the Green Revolution and today's world food supply have been created by the energy of fossil fuel, by the conversion of sustainable small-scale agriculture to corporate-owned mega-farms, and by the extinction of many species and destruction of many ecosystems.

Since Malthus we have learned that food is not the only population-related issue. Minerals, fuel wood, and water are also in short supply in many parts of the world. There is great danger that, in spite of our ability to discuss the issue, we will choose not to limit our population until we overshoot the capability of Earth to sustain us, and consequently endure rapid population decrease by malnutrition, disease, and war.

Additional population issues involve the quality of life. In 2007, for the first time in history, more than 75% of world's people live in urban areas. *Denser populations require more laws to regulate human interactions and bigger government to enforce regulations; the classic freedoms of behavior become increasingly restricted.* Growing population also limits the possibility that everyone can achieve an affluent standard of living. Higher urban populations mean less and less interaction with nature and the wild, making Ecoshift less likely. High human population limits the amount of living space available for all other species.

ZPG

In the social ferment of the late 1960s, which led to the first Earth Day in 1970, I chose to work on overpopulation, which I considered the primary environmental issue. I organized a local chapter of Zero Population Growth and I talked to many groups and on a couple of radio stations about population control. For several years ZPG and other organizations made population a political and ethical issue. The slogan "Stop at Two" induced American couples to reduce their usual family size from 3 , 4, or more children to 2 children. Another slogan, "Whatever Your Cause It's a Lost Cause Unless We Control Population" remains true today and tells why population control is a fundamental component of Ecoshift.

Gradually through the 1970s the nation's reaction to social change brought on conservative government and successfully removed overpopulation from national debate. Partly this was caused by publicity for the fact that the United States had nearly reached the one child per person replacement rate (erroneously considered to mean population growth was halted). Partly this happened because the issue of population

got conflated with the issue of abortion. *I never understood why contraceptive methods that prevent fertilization, and thus eliminate any need for abortion, should be unacceptable.* Unfortunately for humanity and Earth, anti-abortionists stopped all United States government funding for contraception and population control world-wide. The topic of population also became politically incorrect supposedly because it hints of anti-women, anti-people, anti-children, anti-rights, and anti-freedom.

High-handed anthropocentrism apparently gives humans a "right" to control population levels of other species while avoiding consideration of our own population level. In analogy to genocidal racism, this attitude has been called "speciesism".

In 1804 world population was 1 billion people; it took 123 years to add the next billion, 33 years to add the next, and only 14 years to reach 4 billion in 1974. This was the time when the zero population growth movement attained its zenith. Population passed the next two billion in 13 years each, and reached 6.7 billion in October 2008. How high will it go? Predictions by organizations that study the question generally indicate reaching at least 9 and perhaps 12 billion in a few more decades before finally ceasing to grow.

Stabilizing population requires reaching and permanently maintaining a reproduction rate of only two children per couple (better stated as one child per person). However, even after this rate is attained, population will continue to grow for many decades as the large young generations age, and the ultimately stable population will be considerably larger than the current population.

Reasons usually given for eventual cessation of population growth include improvement of general education and health, changing roles of women, and increased knowledge about and access to birth control. *But I have serious personal doubts about whether these trends will be sufficient. I believe that much greater incentives will be needed to reach and maintain a global reproduction rate of one child per person.*

Lots more facts on world population can be found at the Population Reference Bureau web site and on Ecofuture's Population and Sustainability pages. There are plenty of population-related organizations that are trying to stop or reverse the growth of humanity. One international effort that I support is PCI-Media Impact (formerly Population Communications International). They develop TV soap operas in many countries; these soaps take on issues like women's roles, family size, family economics, and birth control, with amazing results. I also support Negative Population Growth, which may be the only organization that overtly seeks a reduction of U.S. population in order to reduce America's adverse impact on Earth.

Individual Choice

The biggest single adverse impact on Earth that any person can have is to produce a child. Population growth is not caused by governments, or corporations, or movements. Population growth is caused by millions and millions of individual choices about how many children to create. Each of us can choose to support one of four different scenarios:

1. Ignore the issue and consequences of population growth and let the future be what it may;
2. Expect that improved education and changing gender roles will take care of the problem eventually.
3. Expect that if the consequences get bad enough, governments will regulate birth numbers; or
4. Express concern and choose voluntarily to minimize number of offspring.

Both I as an individual and Ecoshift as a movement support the fourth scenario. This scenario implies a choice about what human population is most desirable because that affects the desired number of offspring.

Ross McCluney's web site describes various ways of estimating maximum sustainable or desirable human populations. Ecological footprint analysis (see the Sustainability chapter) shows that three Earths would be required to sustain the current world population of 6 billion at the affluence level of North America and Europe. But we only have one! Furthermore, a major fundamental of the Ecoshift movement states that a significant portion of Earth's ecosystems should be set aside for other species to live and evolve unaffected by humans (see the Deep Ecology chapter and the Universe Story chapter). I believe, along with ecologist Eugene Odum, author of "Radical Simplicity" Jim Merkel, and the Ecospheric Ethics web site that this portion should be about 50%. Therefore a human population of one billion is an appropriate goal.

Does this sound ridiculous and impossible? In "Radical Simplicity", Merkel analyzes population possibilities over the next 100 years, and shows how world population in 2100 could be

A. over 20 billion if the growth rate of 2001 continues
B. 9 billion with two-child families
C. 1 billion with one-child families

Yes! If every couple on Earth, starting now, limited themselves to one-child families, as China is attempting to do, we could reach a world population of one billion in only 100 years! I recognize that this is

exceedingly unlikely, but it still represents a goal to be achieved, and motivation for a choice of family size. To those who argue that stabilizing and then decreasing population will cause major disruptions to our economic system by greatly altering age structure, an appropriate reply describes the major disruptions that are going to occur anyway because of the end of fossil fuel and global climate change.

We need to encourage and support both one-child families and especially couples who choose not to have children. We need to keep adoption as a possibility, though the supply of adoptable children has decreased globally as the stigmas of femaleness, illegitimacy, and single parenthood and are being eliminated. We need to make birth control methods and education about responsible sex abundantly available. We need education in parenting and experience in mock parenting before becoming one. We need to eliminate the pro-natalism of potential grandparents. Bill McKibben has argued powerfully for a one child-family in "Maybe One: An Environmental and Personal Argument for Single-child Families".

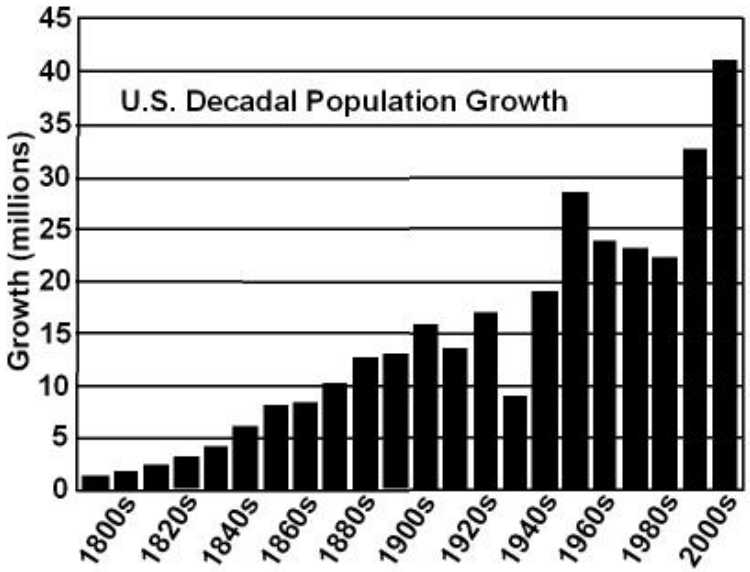
U.S. Population and Immigration

In 1970 the population of the United States was 203 million and President Nixon's Commission on Population Growth and the American Future recommended stabilizing it as soon as possible. Yet the numbers passed 300 million in October 2006 and now in October 2008 have reached 305 million. Predicted U.S. population by 2050 is 430 million or more.

In the early 1970s population activists, including me, succeeded in bringing the fertility rate of native-born Americans down below the so-called replacement rate of about 2.2. The fertility rate is defined as the average number of children produced by a female who survives through age 45; the extra 0.2 allows for mortality before age 45. Through the 1980s and 1990s, U.S. native-born fertility rate remained between 1.8 and 2.1 and the decadal population increase actually declined. But on December 21, 2007 the Washington Post ran an article with the headline "U.S. Fertility Rate Hits 35-Year High, Stabilizing Population" and the initial line "For the first time in 35 years, the U.S. fertility rate has climbed high enough to sustain a stable population, solidifying the nation's unique status among industrialized countries." The article goes on to breath a sigh of relief that we are back up to 2.2 and are not, as some like to say, heading for extinction, like those European countries with fertility way below replacement levels.

What is wrong with this picture? How can we have had a fertility rate below replacement and at the same time have a rapidly rising population? The answer is partly the momentum effect described above, but is primarily immigration, which the article barely mentions. Immigration has been much in the news lately, with great debates over whether it is a good thing ("we are a nation of immigrants") or a bad thing ("they all want

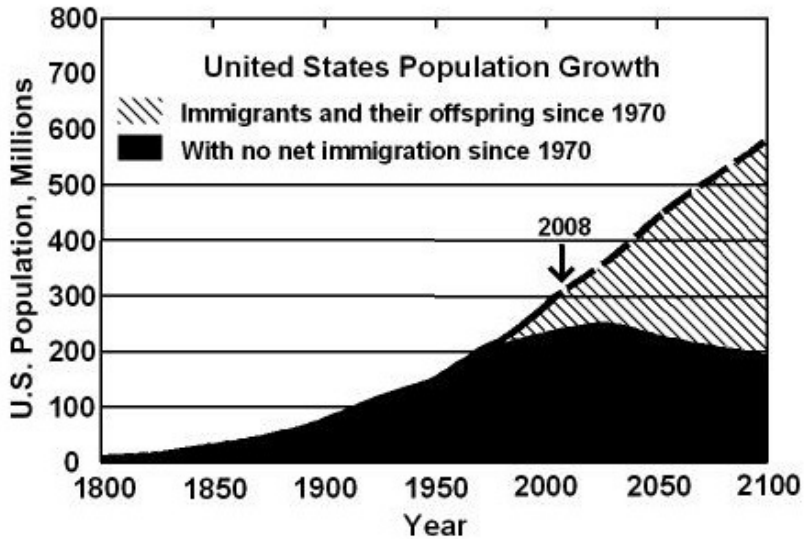
welfare and Spanish-speaking schools"). But the immigration debate rarely involves the pure question of what size population we want in the United States.



About two-thirds of U.S. population growth since 1970 resulted from immigration. Of the 125 million additional Americans expected by 2050, 67 million will be immigrants and 50 million more their children and grandchildren. The United States currently has a *de facto* policy of increasing its population very rapidly. **Legal** immigration is now over one million a year. By far the largest category of immigrants now are relatives of naturalized citizens. Current immigration law provides for entry of spouse, young children, and parents with no quota limits, and of adult children and siblings with quota limits (a long waiting list). This so-called "family reunification" accounts for three-quarters of legal immigration. Then when the parents or siblings become naturalized in six or so years, even more relatives become eligible. This process is known as "chain migration". Many of these relatives enter the U.S. illegally, choosing to do their waiting here. The U.S. Census Bureau estimated in 2006 that there were 11.6 million illegal immigrants in the country, but other estimates are 20 to 36 million. All children born to these illegals are automatically U.S. citizens. As the graph above showed, it is not just the legal and illegal immigrants, but all the children born to them that are pushing up the population so fast.

If we grant amnesty to the illegal immigrants that are already here, as we have done once before, we encourage even more people to come into the U.S. illegally. This, coupled with the fact that some present and future

illegals are terrorists and drug dealers, is prompting Congress to tighten up our borders, especially with Mexico.



Why do we have such a high immigration rate in spite of the Population Commission's recommendation that we stabilize our population? Because of an unusual coalition between big business and liberals. Big business promotes immigration to provide a large labor pool willing to work for low wages. Liberals promote immigration as a way out of poverty and to bring America new energy and greater diversity.

However, as long as the supply of people willing to work for low wages is maintained, it is not possible for minimum wage to rise to living wage levels, which are the wages needed to keep a family out of poverty. The large population of immigrant workers makes life more difficult for our native-born poor, including minorities like Blacks and Native Americans. With high immigration, we ensure that the problems of inner cities, of minorities, of financial inequities, and of health care for all will never be solved. For more discussion of the adverse impacts of high immigration, see Roy Beck's book "The Case Against Immigration", his web site NumbersUSA.com, and The Carrying Capacity Network.

The immigration debate almost never recognizes that it is affluent nations that most need to control their population because they have the largest per capita impact on Earth's systems. As some immigrants do succeed in raising their living standard, they add to the adverse impact of the United States on world ecosystems because they expect to enjoy the American consumer lifestyle. After all, that is what they dream about or they would not be coming here. But as long as the high rate of

immigration continues, there will not be a stable U.S. population, and true sustainability will never be achieved. Furthermore, in terms of improving life for the poor from other countries, the 1 million immigrants we currently allow each year makes hardly a dent in the 80 million annual population increase in the third world.

In keeping with the usual all or nothing, bipolar, approach to issues, immigration proponents argue that we can't "close the door". They fail to understand that the issue is not a choice between letting nobody in and letting everybody in. Clearly the United States would be totally overwhelmed if we allowed everyone in who wanted to come here, therefore we do set some limit on immigration. The immigration debate should really be about what annual immigration rate we should maintain. With immigration of 200,000 a year, which is roughly the historic average, U.S. population could soon be stable and many of our country's social ills would be much more easily solved.

PART 2 – CHANGING PERSONAL LIFESTYLES

The Three R's: Reduce, Reuse, Recycle

"We must make 'disposable' an obscene word." – David Suzuki

Recycling constitutes the first step that most people take on the road to sustainability. Although recycling offers a partial solution to trash disposal problems, its impact is overrated, as we shall see. The triple imperative "Reduce, Reuse, Recycle" has become a significant mantra for our times, or at least a common bumper sticker. The usual order of the "Three R's" makes sense more than just alliteratively. The most important step involves reducing what we buy in the first place. Finding a reuse for items we no longer need is a second step, and only as a third choice should we take it to the former town dump for "recycling".

Reduce

Not buying something in the first place is the most Earth-friendly action one can take *(with the notable exception of not producing a child - see the Population chapter)*. Some of the Voluntary Simplicity chapter, as well as all of ECOSHIFT, encourages you to need less and want less "stuff". The Buddhist concept of "mindfulness" applies here; it means being aware of the difference between "needs" and "wants", and making sure that any item will be repeatedly and frequently used before purchasing it.

Reducing is not just a question of buying less, but also of using less. *One of my favorite examples, or pet peeves, is the use of paper towels in restrooms. How many paper towels does it take to dry two hands? Some people crank away until the paper almost hits the floor, then take one quick swipe and stuff it all, mostly still dry, into the trash bin. I like to see how little I can use; one sheet is plenty, or the handkerchief in my pocket will do, or my pants, or leaving them wet. If I were truly a radical activist I would get stickers made that say "I Like Live Trees Better Than Dead Ones" and put them on every paper towel dispenser I see.*

Reducing purchase of many other things is covered in the Food chapter, the Energy chapter, and the Housing chapter. Little needs to be said here about reducing purchases of "toys" like the latest electronic devices, jet-skis or bigger boats, SUVs, treadmills, and all the other products of our consumer society that advertising, envy, and greed drive us to want.

My Take on Tools

I'm really proud to say that the only power tool that I own is a 3/8th inch electric hand drill. The only other power tools I've ever owned are a lawn mower and, for a short while, a small electric snow blower to alleviate a back problem. (It burned out and couldn't be repaired - aargh.) I have always used hand tools for gardening, for wood and metal home projects, and for snow-shoveling. Some of these tools I inherited from my father and grandfather.

I'm pretty good at avoiding new technology. I don't have a cell phone or any of its fancier and unneeded incarnations. I'm only on my third personal computer since 1985. My DVD player came with the our current residence, as did our two TVs. I can't remember if I've ever bought a TV, having been quite happy with hand-me-downs from relatives. I can personally remember when advanced technology consisted of a dial telephone and a 78 rpm record player. Probably that's why it's easy for me to be a bit of a neo-Luddite. (Luddites were workers in the textile industry who opposed their replacement by machines.)

Reuse

The second R - reuse - includes using again, repairing, or giving to someone else to use. *One of the simplest reuses is the backside of sheets of paper. I have a pile of used-one-side paper; we do most of our printing and writing on it. The backside of used envelopes makes good notepaper.*

Straightening Nails

My father taught me at an early age the potential for reusing things. When we tore down a chicken coop at our old "vacation" farm we used the boards and nails to build a new outhouse. The main job my sister and I had was straightening the nails. I still straighten nails. I have a stack of wood scraps, both new and already used once or twice. Wood is a great material to work with because it is so reusable. What a great reward it is to find a piece of scrap wood that is already just the right size so it doesn't need to be sawn! I still have screws, nails, and other hardware that has been around since my youth. A pile of stuff in a cellar or garage that is waiting to be reused some day is a commitment to the good of the Earth.

Our societal decision to be a throwaway culture has caused the demise of most of the "repair shops" that used to be home or local businesses. It is difficult to find people who will repair lawn mowers, power tools, shoes, clothing, electronic equipment, vacuum cleaners, etc. Large appliance repair is so expensive that broken ones usually go to the dump. I have just discovered a major counteractive effort. Fix-ya.com contains information on how to repair computer stuff, electronics, optics, appliances, and more. The site claims to store half a million user manuals. It also supplies advice from experts for your specific problem, and lists repair services by proximity to your zip code. This is a must site to check before throwing something away because it doesn't work. Hopefully, as sustainability becomes a dominant goal, equipment will be designed to be both durable and repairable, local repair shops will rise again, and "repair" will be another R for the list.

The third aspect of "reuse" involves giving an item to someone else once you are done using it personally. Children's clothing is a good example as it is passed on to younger siblings, to children across the street, or to swap shops and thrift shops. Organizations like the Salvation Army and Goodwill Industries maintain clothing drop-off boxes in shopping centers. *(Drop-off boxes from Planet Aid should be avoided. In my part of the world a newspaper article has questioned PlanetAid and its related organizations. See the Rick Ross Tvind page and Tvind Alert for much, much more. Organizations are not always what they claim to be.)* Many churches run consignment thrift shops for clothing. Books are another area where reuse is still common. Used bookstores, libraries, and yard sales are only some of the ways to pass on books to others. In my area, sales of used ski equipment happen every autumn. Other kinds of

equipment, including furniture, appliances, and outdoor recreation gear, are more difficult to find new homes for.

Perhaps your community has a "Swap Shop" or "Dump Store" where items are available free to anyone who will give them a new home. In my former town of Durham NH the swap shop at the transfer station has its own building, which is open on the two days a week the transfer station is open, and has a large volunteer staff. The staff is responsible for organizing stuff in the building and for deciding what is reusable and what needs to be recycled or trashed. This swap shop has become a social center, much like the town dumps of old. On Saturday morning it is normal for some items to be claimed the minute they are dropped off.

The advent of personal computers has generated new ways to get stuff reused. EBay is at least partly replacing local auctions (for better or worse I don't know), though I personally have never used it. Freecycle is another way; it involves a local e-mail list on which people offer things for swapping or giveaway.

Scaling Down

When my wife and I moved from our home of 30 years to a smaller townhouse in 2005, we were forced to considerably reduce our accumulated stuff. I like to say we got rid of about half of what we owned in every category. It took us six months of effort in sorting and finding new "homes" for the things we decided to do without. I wish we had kept a list of what went where; I think things went to about 40 different places. Books went to three different libraries, to our church, to two or more used booksellers, to a new university in Africa, and to recycling. Furniture went to three furniture and antique dealers, to a university furniture warehouse, to several friends, and to our swap shop. Tools went to relatives and friends. Games went to several schools. A number of items went to the end of the driveway with a big "Free" sign on them, then disappeared! It was a great effort, but it was very gratifying not to take the easy way of just taking it all to the dump. And our children are thankful that they will have much less "junk" to go through when we die!

Recycle

Sometime back around Earth Day 1970 our family bought a three compartment plastic bin that was designed to hold three paper shopping bags for separating stuff to be recycled. We still use it, with one compartment labeled "Plastic", one "Glass", and one "Paper". Local governments began to require "recycling" back then for one important

reason: Town dumps were getting filled up and their continual burning was a source of air pollution. As state governments required the closure of such dumps local governments had to pay for trash to be trucked long distances to huge "sanitary landfills". Only 13% of US trash is still incinerated. Towns recognized then, and still recognize now, that they save money by selling "recyclables" and reducing the tonnage going to the landfill. I have not seen any national statistics, but surely many, if not most, local governments now mandate recycling, though the materials that are included vary widely among communities.

The troubling thing about recycling is that many, many people feel that it is all they need to do, that as long as they recycle they are off the hook, that they have done their share of taking care of Earth. As ECOSHIFT shows, this is far from true. Recycling is only a first baby step in the direction humanity needs to go.

Nevertheless, if the concept of recycling turns you on and you want to learn more about it and encourage it, your community probably has a recycling committee, which may have the job of finding markets for materials, of planning and overseeing recycling facilities, and of encouraging the citizenry to do what is right by publicizing information. Probably all you have to do is volunteer and you'll be on the committee!

True recycling means that a discarded item is remanufactured into what it was originally, e.g. bottles into bottles, cans into cans, paper into paper, and cardboard into cardboard. Glass, steel, and aluminum can recycle perpetually; paper fibers can go around about five times before they become too short and must be filtered from the pulp.

On the other hand, many materials, especially plastics and rubber, are not truly recycled. The new word "downcycling" describes turning something discarded into something else and differentiates it from true recycling. Using discarded ground-up tires as a playground surface is downcycling. Plastics labeled #1 and #2 can be downcycled into deck boards and fleece. All other types of plastic are rarely reusable. Only a small amount of #5 is downcycled by Stonyfield Farms and Recycline toothbrushes. Plastic #3 (PVC) is toxic "poison plastic" and should not be purchased in the first place. So aside from #1 and #2, there is essentially no domestic market. Most of the billions of plastic bags supposedly "recycled" every year are shipped to Asia and burned for energy, releasing lots of toxic materials into the atmosphere! This is a fine example of the United States exporting its pollutants to other countries with less strict environmental laws. Plastic bags are such a trash issue that cities and countries like Paris, San Francisco, South Africa, and Taiwan have already banned plastic shopping bags.

I'm looking forward to the day that manufacturers are required to take back old or broken items, like irons, toasters, refrigerators, and water heaters, and recycle them into new irons, toasters, refrigerators, and water heaters. Surely this would entice them to make such products much more durable and much more repairable! A few forward-looking

companies are doing this already. Interface carpets are designed to be returned to the manufacturer and remade into new carpets. Marathon water heaters are touted as "the most durable water heater made". We all need to support such efforts as much as we can.

"Closing the loop" is necessary if recycling is going to work. This is the second half of the recycling process; we need to purchase recycled products so that manufacturers will be encouraged to make them. There is good commentary on this with regard to paper products at the TreeCycle web site. A number of web sites such as The Green Office offer recycled, environmentally friendly, and sustainable business products, school supplies, food supplies, and paper. Lack of demand has caused some paper manufacturers to stop making recycled paper products. Without demand, municipalities cannot sell the material that is intended to be recycled; this may happen more often than you think in your municipality. The market for recycled material has been severely impacted by the financial woes of late 2008. *It certainly is too bad when people separate material for recycling that ends back up in the landfill because there is no demand for it.*

Products that claim to be recycled, recyclable, or Earth-friendly might really be that – or the claims may be meaningless "greenwash". It is often difficult to tell the difference. Many businesses are climbing on a perceived green bandwagon with stuff that isn't as green as it ought to be, or is unnecessary junk. Even so, one could argue that buying anything that's labeled with a green term sends a message that there is a demand for green products. *Increasing amounts of greenwash suggests that we are moving in the right direction. After everything is claimed to be green we can worry about whether it really is.* On the other hand, if you really want to do things right, do the research needed (this may just mean reading the box carefully) to be sure that the item is what it claims to be.

> "Many of the paper towels, toilet paper, and tissues which are labeled recycled contain only a minimal amount of post-consumer waste - typically only 10%. Even those which claim to be "100% recycled" usually contain only a small fraction of post-consumer material, with the remainder being manufacturing wastes. Just because the label says it's recycled or implies that it's Earth friendly doesn't mean much, despite the pretty green label. As consumers, we often have little protection from misleading claims - read the fine print, and know what you're buying. And remember that our goal should be to use products with as much post-consumer waste as possible." - from the Treecycle web site.

Two other aspects of recycling are worth mentioning. Many companies are finding that "precycling", a term for waste prevention, can

reduce the costs of manufacturing a product. Re-using chemicals such as solvents instead of paying high disposal costs, ensuring that raw materials are used efficiently, recycling water, and burning waste appropriately to produce heat and electricity all can be economically more viable than older linear manufacturing with its huge waste production based on cheap energy and materials costs.

Finally, Paul Hawken argues for biological decomposition of waste and trash. He points out that "A package that turns into dirt is infinitely more useful, biologically speaking, than a package that turns into a plastic park bench. Heretical as it sounds, designing for decomposition, not recycling, is the way of the world around us" ["A Declaration of Sustainability", Utne Reader, Sept/Oct 1993].

Energy Choices: Reduce, Reduce, Reduce

> "Americans are consuming 25% of the world's energy with only 5% of the population. We have the greatest adjustments to make." – John Howe

The United States and its government are finally beginning to get it: our huge consumption of energy from fossil fuels cannot be sustained, both because the supply of fossil fuel is running out and because the burning of fossil fuel is seriously heating the whole planet. On February 2, 2007, the Intergovernmental Panel on Climate Change released a report on the physical basis of climate change. It has effectively ended debate about whether global warming is caused by human activities. The answer is YES.

Both the rising cost of fossil fuel and the rising atmospheric content of carbon dioxide (CO_2) make a lot of news lately. Discussion about our energy future engenders rapid change in our energy actions. Consequently this chapter has become impossible to keep up-to-date and comprehensive.

Many books and web sites discuss the fact that half of Earth's oil is gone, that peak of production, the Hubbert Peak, has just been reached, and that oil costs are beginning to rise rapidly. A great debate is beginning about what we will use for energy in place of oil. There is no easy and no completely acceptable answer. Here are just two years worth of books, on this subject, none of which I have read:

- Richard Heinberg (2004). "Powerdown"
- Thom Hartmann (2004). "The Last Hours of Ancient Sunlight"
- Julian Darley (2004). "High Noon for Natural Gas"
- Kenneth Deffeyes (2005). "Beyond Oil"
- Richard Heinberg (rev. 2005). "The Party's Over"
- Lindsay Grant (2005). "The Collapsing Bubble"

Web sites about energy also abound. Peak-oil-crisis.com contains lots of articles, links, prices, and projections.

Energy Consumption and CO_2 Production

Total world energy use in 2005 was about 410 EJ (an exajoule is 10^{18} joules), which is equivalent to the energy in 72,000,000,000 barrels of oil. The sources of this energy are: oil 39%, natural gas 23%, coal 24%, hydro 7%, nuclear 7%, all others <1%. The United States consumed 25% of the total with roughly the same ratio of sources: fossil fuel (oil, natural gas, coal) 85.7%, nuclear 8.0%, hydro 2.8%, wood 2.1%, biowaste 0.6%, ethanol 0.3%, geothermal 0.3%, solar 0.06%, and wind 0.15%.

Because ECOSHIFT is primarily about individual choices, I am not going to say much more about global and national statistics and goals for energy production and greenhouse gas emission. For more statistics visit the Energy Information Administration web site. For links to lots of information sources see An-Inconvenient-Truth.com. It is more appropriate to start this chapter by discussing individual or family CO_2 production. Calculators for this are on web sites like Climatecare.

Here is a calculator simplified from YES magazine [Winter 1999/2000], with my household numbers inserted:

CO2 Emission in Pounds Per Year For a Household			
Use	Rate	Amount	Pounds
Auto travel	22 lbs/gallon	470 gal	10340
Air travel	0.9 lbs/mile	2000 mile	1800
Electricity	1.5 lbs/kWhr	6700 kWhr	10050
Heating oil	22 lbs/gallon	0 gal	0
Natural gas	11 lbs/therm	0 therm	0
LP gas	13 lbs/gallon	154 gal	2002
Total	–	–	24192

That's 12 tons of CO_2 per year. My home is heated by electricity and LP gas; I have no air conditioning. My air travel is limited; I've reduced it considerably in recent years. Note that one 3000 mile airplane trip for a couple (12000 round trip passenger miles) creates 10000 lbs CO_2, about

equivalent to a whole year of auto travel or electricity. (Airplanes get about 30 passenger miles per gallon.) To obtain your own household values, replace my numbers in column three with yours, multiply by column two to get your pound values in column four. (One cubic foot of natural gas is 0.01 therms.)

No matter what calculator you use, I'm sure it will become clear that travel, home heating, and electricity all contribute significantly to your total. However, these calculations include only your easily calculated or personal emissions. The CO_2 produced by all your indirect energy consumption is not included. That's all the energy used in making and transporting all the things you buy, from food and housing to automobile, equipment, cosmetics, drugs and medical care, computers and other electronics, including towers and satellites that make them work, etc, etc. Arguably all the energy used in the U.S. is used only for the benefit, in one way or another, of the individuals living there (even the cost of the Iraq war) and so can be allocated on a per capita basis. Dividing total U.S. carbon emissions by population yields an annual average of 48,000 pounds of CO_2 per person. National energy consumption can be allocated as follows: residential 22%, transport 28%, commercial 18%, industrial 32%. Only the residential component and perhaps two-thirds of the transportation component are included in the table above, so the household total needs to be multiplied by 2.5 to account for the household's indirect CO_2 production. For my household 2.5 x 24192 = 60,000 pounds, so my two-person household is on the low side of the average, but not by a whole lot in spite of our efforts to reduce energy use.

In “Radical Simplicity “ Jim Merkel provides an alternative and more detailed method to calculate your energy consumption in the context of ecological footprint analysis (see the Sustainability chapter).

Unsustainable Energy

The future will see humanity using a wider and more balanced variety of energy sources. Decisions about which sources are most appropriate and most important will be made in the political and economic arenas, probably more influenced by pragmatism than by sustainability and ecocentrism.

Fossil oil is about half gone. At the current rate of consumption there is only enough for another 30-40 years, and worldwide demand is increasing. Fossil natural gas is running out almost as fast as oil. With rising oil and gas prices comes increasing demand to drill, drill, drill, so it appears humanity will race to use all the remaining oil, without thinking about saving any for future generations. It also appears that the rich will get more and more of the remaining more and more expensive fossil fuel and the poor will get less and less.

There apparently is enough coal remaining for another 400 years or so at present consumption, but using it will greatly increase atmospheric

CO_2 causing more rapid global warming. The question of whether to use coal to replace oil will be greatly debated. Some countries, like China, have already made the decision. Coal use also entails problems of destructive mining and air pollution. Optimists hope that new technology such as carbon sequestration will control the climate effect. But in the long run, coal is still a non-renewable resource and will become more expensive as it gets scarcer.

Technological optimists hope, or even expect, that modern technology will come to the rescue of the global warming issue. "Active sequestration" captures CO_2 from power plants and stores it under ground. The Bush administration has both pushed this and has cancelled pilot projects. The process requires that fossil fuel (oil, gas, or coal) be transported to locations near depleted oil or gas fields or deep saltwater reservoirs. The CO2 produced there in (new) electric power plants is captured and piped underground under pressure. From 10 to 40% of the energy produced by the plant is required for the storage process and more is required to transport the fuel to the power plant. For more on this see the U.S. DOE Fossil Fuel web site. Obviously this technique cannot be applied to distributed fossil fuel burning such as automobiles and airplanes.

Another great debate is beginning about reincarnating nuclear power. Even some sustainable energy advocates, like Amory Lovins, believe that nuclear power will be necessary during the coming transition to truly sustainable energy. But there are several big drawbacks. It will require some huge uranium mines and new extraction facilities, both of which require fossil fuel to operate. There is still no definite solution for what to do with radioactive waste. Nuclear bombs and terrorists are an associated risk. The cost of nuclear energy would be huge without us taxpayers subsidizing all the industry's accident liability. As with coal, cost of uranium extraction will increase as the most available ore gets consumed.

Fuel cells and hydrogen power have been hyped as a solution to our energy problems. But the hype fails to recognize that **hydrogen is only an energy storage medium**, like a battery. Fuel cells require more energy input to separate hydrogen and oxygen from water than they can produce when the two elements are recombined. Hydrogen gas is not laying around on Earth like coal and oil; hydrogen is always combined with other elements at Earth temperatures. It takes energy to produce hydrogen gas just as it takes energy to produce electricity. Calling a bus that runs on hydrogen fuel a "zero emissions vehicle" is like calling a house that is heated by electricity a zero emissions house. The emissions occur where the energy is produced, not where it is consumed. Even if hydrogen issues such as safety, weight of storage tanks, and fuel cell technology are overcome, where will the energy come from to make the molecular hydrogen?

Fusion power remains a dream for the future. In spite of considerable research, little progress has been made on the immense technical difficulties. Various other proposed energy sources such as solar collectors

in space and "energy from ocean water" are similar wishful thinking. Proposed techno-fixes for the CO_2 emission problem include several kinds of geoengineering. Fertilizing oceans with iron and/or nitrogen may increase oceanic sequestration of CO_2 by effectively eutrophying the system. Adding particulates to the atmosphere might cool the surface by reducing solar radiation reaching the ground, much as volcanic dust does. *I am pessimistic about such solutions because the responses of natural systems have proven to be much more complicated and difficult to predict than we might wish.*

The truly renewable energy sources – solar, wind, biomass, hydro and geothermal – are each discussed in their own sections below. For more on these see the web site of the National Renewable Energy Laboratory. For quantitative evaluations of both renewable and non-renewable energy sources I recommend "The End of Fossil Energy" by John Howe. He is a realist who, though he emphasizes the future of solar energy, does not see it as a total solution. He effectively concludes that true sustainability for humanity requires both a large reduction of energy demand per person and a large reduction of population.

Energy Conservation

Debate over what alternative energy sources are best avoids the single most important solution to the energy-climate problem – reduction of demand. During the oil crisis of the late 1970s, the Carter administration pushed hard for energy conservation. "Turn Out the Lights" stickers appeared on all the light switches in the federal building where I worked. Highway speed limits were reduced to 55 mph. People bought small cars with high gas mileage. Thermostats were lowered. Such conservation efforts produced a considerable decrease in American energy use. Then the conservative reaction began, the Reagan administration had no interest, and we began creating the current situation. A federal government that is really interested in energy conservation should review the efforts of the late 70s. It worked then and it could work again now.

The energy-climate problem can not be ignored or avoided by blaming others. Nearly everyone who reads ECOSHIFT is affluent enough to be part of the problem. The solution requires billions of individual choices to reduce personal energy demand. Information about how to do this abounds, but there is a risk that taking one or two simple actions, like changing light bulbs, assuages the concern. Really significant conservation will require permanent changes in living habits. Here is my list of actions that contribute to making a difference, in rough order from most to least important:

- Reduce or eliminate air travel
- Reduce or eliminate long automobile trips

- Live close to the places (work, stores, restaurants, bank, etc.) you visit the most
- Buy less stuff, saving the energy for its manufacture and transport
- Use public transportation
- Drive a car that gets at least 35 mpg
- Live in the smallest housing you can
- Buy locally-grown food and locally-made products
- Reduce home heat loss in winter and heat gain in summer
- Have an efficient refrigerator/freezer (one-quarter of household electricity)
- Turn off lights (including away from home!)
- Take fewer, shorter showers
- Hang laundry out to dry
- Bicycle or walk for local trips
- Use fluorescent bulbs

As prices of energy rise to reflect its real cost to Earth systems, humanity will use more and more of an ancient and efficient energy source: human power. For personal transportation, a bicycle provides high efficiency. The energy consumption of a bicycle is about 130 kJ/passenger mile (from your food) compared with 1000-3000 for auto or mass transit. A bicycle also provides good exercise and better health. During the year I lived in Sweden I used a bicycle and never had a car. Plowed and sanded bicycle paths network the cities and towns to provide safe year-round commuting. For those more fearful of skidding, studded bicycle tires are available too. Some companies market bicycles with electric power assistance for older people or hilly environments. It is not even necessary to own a personal bicycle. Several cities around the world have established bicycle-sharing plans of various types. Numerous cities in less affluent countries support pedal taxicabs.

Human-powered Birding

I have been a birder since my youth. Birding as competitive recreation involves finding as many species as possible for a day, location, year, or life list. Many birders think nothing about jumping in a car, or even a plane, and traveling many miles to see a rare bird that someone else has found.. As my contribution to reducing fossil fuel consumption by birders I invented the "human-powered year list". This involves counting all the species I can see by traveling under my own power (no fossil fuel) from my own home. In 2002 I walked, bicycled, and skied enough to find 211 species, a very respectable year list even with a car. My effort has encouraged others to take up human-powered birding and helped in a small way to reduce fossil fuel demand.

Solar Energy

The sun provides 5,500,000 EJ/yr at the top of Earth's atmosphere, orders of magnitude more than the 410 EJ/yr of human energy use. Atmospheric absorption and reflection by clouds reduce the solar energy reaching Earth's surface by about half and 71% of the remaining energy falls on the oceans. So solar energy reaching Earth's land surface is 700,000 EJ/yr. Photovoltaic panels (solar cells) can collect this energy with an efficiency of 15%, so covering 0.4% of the Earth's land surface would be necessary to meet all current energy demand, about 1 out of every 250 acres. The United States uses one-quarter of the world's energy but has only 1/16th of the world's land area; we have to obtain energy at four times the world average rate so we would need to cover 1 of every 60 acres of the United States with solar panels. It seems unlikely that we will ever meet all of our current energy demand by solar power alone but photovoltaic devices can provide a lot of truly sustainable energy that is pollution-free except for manufacture, storage, and distribution systems.

Lack of a convenient energy storage mechanism constitutes a major drawback of both photovoltaic and wind power systems. Sunlight and wind are intermittent power sources that do not temporally match power demand. Distributing power into a large national or continental power grid mitigates some of this problem, but entails considerable energy losses. In some geographic areas, excess electricity can be stored as potential energy by pumping water uphill into a reservoir when demand is low and then draining it through generators when demand is high. Future plug-in hybrid electric vehicles will provide a distributed storage system in their batteries for solar and wind power; these vehicle batteries can also provide backup electric power for a home.

Photovoltaic panels are not the only way to use solar energy. Solar energy drives Earth's biological systems via plant photosynthesis (see the Biomass Energy section below). Solar energy has heated buildings and dried clothes since they were invented. Much new construction incorporates "passive" solar power for heating, for cooling via heat pumps, and for hot water.

Solar power is a great way for those with enough money and appropriate location to demonstrate commitment to changing our energy habits. Some people are already using solar power for their energy needs, choosing to live "off the grid". Outfits like the Blue Link Solar Network or, closer to my home, Sunweaver and SolarWorks offer residential solar panels and systems.

Wind Energy

Wind farms, consisting of large groups of wind turbines, apparently are the most economically viable way to produce "green" energy right now. Unfortunately many proposals for wind farms generate massive opposition because of their adverse aesthetic effects. To be most efficient, they need to be sited on high hills or mountains, or on level plains or the ocean, where in all cases they are highly visible. *The argument on aesthetics needs to be rephrased away from comparing wind farms with no wind farms, and toward comparing wind farms with nuclear power plants, coal mines, oil wells, and biomass clearcuts.* We have learned to accept those eyesores as necessary to provide us with energy, so why not wind farms as well. Energy consumers can not ethically support the NIMBY (not in my back yard) syndrome.

Another objection to wind turbines is that they kill birds. As a bird-lover myself I am sensitive to that problem. Statistics on mortality of migrating birds from all kinds of communication towers and power lines, as well as by motor vehicles and tall buildings, are hard to come by and inconsistent. Certainly, so far, wind farm mortality of birds is a tiny fraction of mortality from cats and automobiles. Undoubtedly more research is needed, but funding for such research is difficult to find.

Biomass Fuel

Biomass energy includes both using crops to create ethanol or biodiesel fuels and burning of wood or organic "waste" for heat or electricity. However, each form of biomass energy has various drawbacks.

Biomass energy is solar energy that has been converted by photosynthesis into chemical energy as carbohydrates and other forms of organic matter. The maximum efficiency of photosynthetic conversion in plants is about 5%, compared with 15% for photovoltaic panels, but this efficiency requires megafarming methods including irrigation, fertilization, and pest control. Forests and other natural plant covers convert solar energy to biomass at 1-2%. At 1% conversion efficiency, at least 5% of Earth's land surface would be required to meet all our current energy demand with biofuel.

Ethanol from biomass is currently in vogue as a gasoline substitute, with the connivance of big agriculture and taxpayer subsidies of 51¢/gallon (*money that could better be spent on energy conservation and wind and solar power*). When ethanol or biodiesel fuel is extracted from sugar cane (South America), corn (North America), or rapeseed (Europe), the land produces 300-700 gallons/acre/year. This production of biomass fuel from crops is inefficient. The ratio of energy produced to energy required for fertilizer, irrigation, and extraction ranges from a reasonable 8:1 for sugar cane in Brazil to only 1.5:1 for American corn. It takes

energy to get energy, and U.S.-produced ethanol requires virtually as much fossil energy to produce as it contains!

Demand for land to produce biofuel raises considerable concern about converting food-producing land into fuel-producing land. Humans already consume about 30% of global photosynthesis for food, fuel, and fiber. Using more of this for energy means less for food; biomass energy already competes with food production for land in many parts of the world. In the U.S., one-sixth of the wheat and corn harvest now goes to biofuel; consequently the price of wheat with which we feed the rest of the world has risen 50% in 2 years. In poor tropical countries food prices are rising and food is becoming scarcer because biofuel is more profitable for local farmers. What are the ethics of converting land that is producing food for relatively local consumption into land that is producing fuel for distant, wealthier, oil-demanding countries like the United States and China? And keep in mind that some of China's energy use creates products that are bought in the United States.

From an ecosystem viewpoint, conversion of forest land to biomass oil production has more adverse impact than conversion of land already in agriculture. Yet clearing of tropical forests to produce biomass oil is proceeding apace. Obviously this destroys the forest ecosystem and its inhabitants, adding to the widespread impact of similar clearing for grazing land to produce meat for North Americans. As described in the Planting Trees section below, conversion of forest to agriculture contributes considerable CO_2 to the atmosphere as organic matter decomposes, thus offsetting some supposedly sustainable benefit from the biomass fuel.

Burning of wood for heat is as old as human use of fire. Because humanity has not learned to control its numbers or its demands for energy, depletion of wood has caused the impoverishment of nations and the collapse of civilizations. In my own bioregion, the southern Gulf of Maine (see the Bioregionalism chapter), the original forest was almost completely cleared by 1850 to meet demand for fuel, housing, and growing food for animals. Development of midwestern prairies for agriculture relieved the pressure and the forest has since recovered. Now demand for wood energy from that forest rises rapidly, both for home wood stoves and for wood burning electric power plants. During the first oil crises in the 1970s, wood stoves created a significant problem of particulate air pollution. Has the burning efficiency of stoves and power plants improved to the point of preventing this in the future? Regional energy companies tout the supposed sustainability of burning forest biomass in power plants. However we know that repeated intense harvest of forests leads to nutrient depletion of the soil and presumably declining productivity (see for instance my own work in Federer, C. A. *et al.* 1989. Long-term depletion of calcium and other nutrients in eastern U.S. forests. Environmental Management 13:593-602). Natural ecosystems are designed by evolution to sustain themselves by internal recycling of

everything. If "product" is removed from the site, sustainability probably cannot be maintained without external inputs of fertilizer. There is also increasing danger to forests from exotic pests (see the Conservation Biology chapter) and climate change. The impact of these on forest productivity remains unpredictable.

Hydro and Geothermal Power

Water flowing downhill provides a sustainable source of energy. Most of the large rivers of the world are effectively fully dammed and thus most of the potential hydropower on Earth is already being used. On small streams, many of the small dams that used to provide power to small mills have fallen into disuse, so there is some potential for redeveloping these distributed power sources. But dams small and large have several major drawbacks. The reservoirs behind them fill gradually with sediment, reducing the amount of water that can be stored and thus the ability of the associated power plant to mediate the discrepancy between timing of streamflow and timing of power demand. Dams and their reservoirs severely alter the stream ecosystem and adversely affect fish migration; to reverse these impacts, some now unused dams are being removed. Development of new large dams can displace many people from their homes; the new Three Gorges Dam in China required relocating 1,200,000 people!

Tidal power provides electricity in a few locations around the world and several potential locations have been identified. Drawbacks include high initial cost and fish mortality. Wave power remains another possibility for technological development.

Because the temperature of Earth increases with depth below the surface, Earth's heat provides an exceedingly abundant and theoretically sustainable source of energy. This geothermal energy can be obtained in three ways. Where hot volcanic rock is close to the surface, steam can be extracted to make electricity and hot water can be extracted for direct heating of buildings. Iceland, New Zealand, and the United States lead in this kind of geothermal development of geyser and hot spring fields. Deep drilling, to depths of 5 miles or more, has potential for extracting Earth's heat almost anywhere, but remains very expensive.

On a local scale, geothermal heat pumps extract heat energy from very shallow depths. Almost everywhere, the diurnal and annual fluctuations of air temperature are damped to constancy at a depth of about ten feet. Below this depth soil and rock temperature remains close to the mean annual surface temperature all year. A geothermal heat pump consists of pipes buried in the shallow ground near a building, a heat exchanger, and ductwork into the building. In winter, heat from the relatively warmer ground goes through the heat exchanger into the building. In summer, hot air from the house is pulled through the heat exchanger into the relatively cooler ground. Heat removed during the

summer can be used to heat water. A variety of systems are available and cost is relatively low, so heat pumps are being incorporated into many new buildings, even though most demand considerable land area.

Carbon Offsets

Offsetting carbon dioxide production by an individual, a corporation, or a nation means paying for something that will reduce carbon emissions someplace else by the amount of the carbon emissions produced. Such offsets take many forms. Individuals may voluntarily "tax" themselves for the CO_2 they produce and then use the funds to support alternative sustainable energy sources. Individuals and corporations may fund reforestation to absorb their CO_2 production. Corporations and nations may voluntarily or involuntarily buy and sell carbon emission credits under "cap and trade" agreements.

A wide variety of organizations support offsets from voluntary "taxation". The Carbon Fund allows you to designate whether you want to support renewable energy projects such as wind and solar, to support reforestation projects, or to purchase and retire emission offsets on the Chicago Climate Exchange. The Bonneville Environmental Foundation also provides several designations, as well as an informative site. Wind Watts from Maine Interfaith Power and Light support the Mars Hill wind farm and other projects in Maine. Other offset sites are TerraPass, Greenseat for airline travel, and Climatecare. The suggested amount and value of these offsets varies considerably among providers, and there is no guarantee that payment actually creates additional non-fossil energy. The "Consumers' Guide to Retail Carbon Offset Providers" from Clean Air-Cool Planet thoroughly covers the whole offset issue, though its list of providers is somewhat out-of-date at two years old. The Tufts University Office of Sustainability has another thorough discussion and guide titled "Voluntary Offsets for Air Travel Carbon Emissions" in its "Archive".

What should the cost of producing a ton of CO_2 really be? A true answer to this question would require the cost of **all** the adverse consequences of global warming now and in the future. The incalculability of this effectively makes any assigned number meaningless. The frequently used value of $5 a ton should be a minimum. A more effective personal value would be high enough to give serious incentive to continually reduce personal fossil fuel consumption.

Voluntary purchase of carbon emission offsets is a great idea as long as it doesn't allow you to think you have thereby done enough. As the Carbonfund states "Reduce what you can, offset what you can't." Reduction comes first. Al Gore is proud that he buys offsets for all the carbon he emits by flying all over the place talking about the problem. But buying carbon offsets does not reduce CO_2 emissions by anything at all, *and buying carbon offsets for an ecotourism trip is even hypocritical!*

A big deal is currently being made of the capability of trees and forests to absorb and store carbon from the atmosphere, so-called "passive sequestration". So tree planting constitutes a major component of some carbon offset schemes. But this is not as useful as it seems.

Planting Trees

Forests contain considerable amounts of carbon stored in the vegetation and the soil. In undisturbed forest ecosystems, carbon input from atmospheric CO_2 via the process of photosynthesis balances output of carbon to atmospheric CO_2 via respiration (oxidation) in all the living organisms of the forest. A steady state of the carbon cycle is maintained. When forests are altered by timber harvest or conversion to other human uses, respiration exceeds photosynthesis, organic carbon in the soil-vegetation system declines, and CO_2 in the atmosphere increases. Burning converts even more organic carbon to CO_2. Worldwide, CO_2 production from forest cutting and burning have contributed somewhere between 7 and 30% of the rise in atmospheric CO_2. The uncertainty indicates how little we understand about the complexity of Earth's ecosystems. If regrowth of the forest occurs, photosynthesis soon exceeds respiration and the forest becomes a sink for carbon for some decades until the steady state is reestablished.

Tree planting has a beneficial effect only in areas where it increases the rate of regrowth above what would happen naturally. If rapid natural regrowth of forest or native grassland occurs, such as in my bioregion, then planting makes no contribution. Furthermore and most importantly, revegetation, whether naturally or by planting, can only recapture an amount of carbon that was originally present in the system. Trees will not grow in places they have never grown before. Consequently, **revegetation does not reduce atmospheric CO_2 from fossil fuels** but only re-stores atmospheric carbon that was produced by devegetation.

Cap and Trade

Governments developed cap and trade programs in the 1980s to reduce emission of sulfur dioxide and other air pollutants. A maximum amount of emission is established and then allocated among all the involved corporations on some kind of *pro rata* basis. Effectively this gives a company a permit to continue that level of pollution. But any company that adds emission controls can at least partly pay for their cost by selling its unused allocation, called emission credits, to someone else. A company that purchases a credit can increase its emissions by the amount of the credit. Over successive years, the total permitted emission level, and thus the available credits, is reduced. This economic "cap and trade" system worked well to reduce sulfur dioxide emissions from fossil-fuel burning power plants.

The European Union has set up a cap and trade system for carbon emissions. Carbon credits are distributed annually among 4500

companies, mostly ones that generate electricity. The system covers 45% of the EU's total carbon emissions. Of course there is great debate over how rapid the emission reduction should be and the amount is not set very far ahead. Voluntary trade in greenhouse gas emission credits in the U.S. occurs on the Chicago Climate Exchange. In late 2008, ten northeastern states auctioned off carbon emission credits to power companies and other bidders. At least some of the $100 million raised will go toward energy efficiency and renewables, but critics state that the process is too limited and the cap is not low enough.

The emission trading system does not work well if polluting companies simply pass the cost of credits on to consumers rather than working to decrease emissions. Critics of the emission system propose alternatives, such as distributing credits to individuals (taxpayers or voters) who could then sell them to fossil fuel companies at post offices and banks, or auctioning credits for extracting coal, gas, and oil and using the income for renewable energy. Surely many more possibilities will be proposed and discussed and perhaps put into practice before the carbon emission problem is resolved.

The attempt of the Kyoto protocol to reduce carbon emissions globally has foundered on disagreement over who should "go first". The affluent countries want the poor countries to reduce just as much as "we" do, but the poor countries ask why they should not be allowed to achieve what the affluent already have. China, which is developing rapidly, does not want to slow its development by not using coal. The United States pronounces that the rest of the world cannot tell us what to do. (*This apparently does not keep us from telling the rest of the world what to do!) Humanity needs to stop debating what temperature rise is acceptable or what percent emission reduction is needed by when. We need to all get on with the job of reducing emissions of CO_2 and other greenhouse gases as fast as possible by all means possible. Wouldn't it be great if the United States began to lead by demonstrating to the world how it can and should be done? Wouldn't it be great if the United States government launched a national effort to reduce its energy consumption on the same scale as the race to space or the interstate highway system? Shouldn't we expect strong leadership on this from our next President?*

Major changes in our way of life are required **now** in order to minimize the amount of global warming. Because these are pretty unlikely, we need to prepare for the climate changes to come. Discussion about this is becoming widespread, *but I'm afraid that most people are still unwilling to admit or accept the wrenching changes that will occur. Much of ECOSHIFT is about these changes and whether we will make them voluntarily or involuntarily. ECOSHIFT readers are likely to be in the vanguard of change and are the leaders the rest of civilization will look to as examples of how to live in the future.*

Food Choices: Organic, Vegetarian, Local

> "A common complaint about organic and local foods is that they are more expensive than 'conventional' (industrially grown) foods. Most consumers don't realize how much we're already paying for the conventional foods before we even get to the supermarket. Our tax dollars subsidize the petroleum used in growing, processing, and shipping these products. We also pay direct subsidies to the large-scale chemical-dependent brand of farming. And we're being forced to pay more each year for the environmental and health costs of that method of food production." – Barbara Kingsolver ["Animal, Vegetable, Mineral", p. 117]

What we eat, where it comes from, and how it is grown, has a major impact on ourselves, on the humans who produce the food, and on Earth. This chapter includes health, food, and water issues, the role of global corporations in these, and ways to eat more sustainably. As with energy, the media are now full of information about sustainable food, so I only discuss things of particular interest to me. For a similar viewpoint to this chapter, search for Jennifer Bogo's "When Conservation Meets Cuisine" on the National Audubon web site. Much of the material covered here may also be in "Food, Energy, and Society" by David and Marcia Pimentel.

The Globalization of Food and Water

Way back in 1968 William and Paul Paddock published "Famine 1975", which compared population growth with growth of food production and concluded that the latter could not keep up with the former much longer. This was Thomas Malthus in modern clothes, and the book was derided then as neo-Malthusian, and obviously Malthus had been wrong. The Paddocks' prediction also turned out to be mostly (though not completely) wrong in its timing. The Green Revolution happened instead and mass world-wide starvation was postponed. The Green Revolution involved use of new, genetically superior, breeds of grain crops together

with massive doses of irrigation, fertilizer, and pesticides; world crop yields per unit land area were considerably increased through the 1980s.

The Green Revolution also led to the rise of global agribusiness. *Global agribusiness means you don't know where your food comes from and how it was produced.* A small handful of global corporations control virtually all seed and fertilizer production. U.S. Undersecretary of Agriculture for Rural Development, Thomas Dorr, has said that "the right scale for farms in the future will be about 200,000 acres of cropland under a single manager." Three-quarters of U.S. farm subsidies now go to the largest 10% of farms. These are not family farms; they are owned by corporations. At the retail level, Wal-Mart sells more food in the United States than any other company, accounting for 10% of annual sales. Supermarket food is cheap because it does not include the hidden costs of food subsidies, exploited labor, fossil fuels and global warming, subsidized transportation, soil and water depletion and pollution, medical costs of a high fat diet, dangers of genetically-modified crops, and ecological costs of monoculture.

The Green Revolution has been subsidized by cheap fossil fuel, thus world food supply is part of the house of cards that may come tumbling down when oil runs out. The average mouthful of American food has traveled over 1500 miles, and ten calories of fossil fuel are required to produce one calorie of food. Where will we get the energy needed to produce fertilizers and pesticides in huge quantities, to build and maintain massive irrigation projects, to drive farm machinery, to process and package food, and to transport food these thousands of miles?

The growth of agribusiness has made economic competition for food a global issue. Ecojustice (see the Ecojustice chapter) demands that populations in places where food is grown should be fed first. But that doesn't happen when rich people and nations want food grown in poor areas. Crop land in Africa, southeast Asia, and South America provides food for the rich nations, not for the locals. Meat, fruits, vegetables, and grains all move around the world to whomever will pay the most. The World Trade Organization controls international competition and prices, usually for the benefit of agribusiness, not for local populations.

The cornucopians of agribusiness are now bringing us genetically-modified organisms (GMO), which are plant varieties that carry genes from other unrelated organisms. Moving genes from one species into another is a far cry from Mendelian genetics, in which plant varieties within a species or group of closely related species are selectively modified by trial-and-error. In GMOs genes are being placed into plants of species in which they have not previously existed; these genes can then move by natural fertilization throughout the species. The potential results of this uncontrolled scientific experiment are hotly debated. In addition, agribusiness wants to control their "patented" GMO seed so that farmers world-wide have to buy seed from the corporation rather than saving for next year the seed produced by their own crops. The whole issue is so hot

that some European countries have banned GMO food, while the U.S. refuses to require GMO food to be labeled. If you live in the U.S. you may not know when you are buying it.

Agribusiness has also brought us "factory farms" in which animals are kept in totally artificial conditions where they can barely move and are fed various hormones to artificially increase their meat, egg, or milk production. People for the Ethical Treatment of Animals is the best known organization fighting such subjugation of animals to human demands. Factory farms are also infamous for the amount of pollution they create, and for driving family farms out of business.

Water

A related but more recent development of globalization is corporate ownership and marketing of water. This has several aspects. Publicly-owned, local water utilities are being sold by communities to corporations as part of "privatization". This is part of a great debate about whether a product or service can be produced more efficiently and cheaply by government or by private corporations. All kinds of questions arise about taxes, government bigness and inefficiency, corruption, salaries and benefits, and so on. *It seems to me that all the problems blamed on government in the past are now being replicated in corporations. It is now huge corporations rather than governments who are taking the lead in lying, cheating, stealing, cronyism, pocket-lining, etc. Do we really want the Enrons of the world running our formerly public water supplies?*

Global corporations are taking over the bottled water business. In my bioregion there are no rock aquifers, and gravel aquifers from continental glaciation are few and far between. These aquifers and their associated rivers are used for local water supply, for river-based recreation, for hydropower, and to maintain the riverine ecosystem. Yet big corporations want to mine water from the gravel aquifers to put into bottles and ship around the world. This is the modern versions of "spring water" bottling of the previous 100+ years, but multiplied from hundreds of gallons to millions of gallons. USA Springs wants 400,000 gallons a day from Barrington NH; this is opposed by local citizens organized as Save Our Groundwater. Poland Spring (a Nestle subsidiary) wanted to greatly increase the 200,000 gallons a day it pumped in Fryeburg ME, but local opposition vetoed this so Poland Spring will get water from less-populated Kingfield ME instead. Aside from the sustainability question, a major issue was the increased truck traffic to move all this bottled water somewhere else. See Defending Water for Life in Maine for more on this local issue and the Alliance for Democracy for the national level. The corporations who are after this water argue that because the water will be shipped internationally, international trade agreements like NAFTA and WTO apply, so denying them the right to extract water is an illegal restraint of free trade.

The quality of public water supplies is closely monitored by state health agencies and by the EPA under the "Safe Drinking Water Act"; but bottled water is under the aegis of the Food and Drug Administration, which does little or no testing and has no requirements. Bottled water corporations have been convicted for misleading advertising. Plastic water bottles are a major waste product. There are many reasons to prefer local water from your public water supply; if you don't like it from the tap, consider a renewable charcoal filter.

Water, literally the source of life, is becoming scarce in large parts of the world. Future wars may be fought over water rather than over oil. The rights of individuals and communities to using local water for drinking, cooking, bathing, and cleaning are being trammeled by national governments and corporations. In many places water for irrigation of crops takes priority. This may be ethically acceptable where the food produced is locally consumed. But it is not ethical when the irrigation is used for feed grains that are shipped worldwide (whether to feed humans or animals), for fruits and vegetables that are shipped worldwide, or for biofuels that are shipped worldwide, while the local people do not have enough water. The sustainability of irrigation is in serious doubt in many parts of the world where water tables in aquifers have dropped (water mining) or river water is more than "fully allocated". The so-called "free economy" does not work where water is scarce.

When Bechtel attempted to take over the water supply of Cochabomba, Bolivia in 2000, the local people protested strenuously. The protest generated the Cochabomba Declaration, which states:

> "Water belongs to the Earth and all species and is sacred to life. Therefore, the world's water must be conserved, reclaimed, and protected for all future generations and its patterns respected. Water is a fundamental human right and a public trust to be guarded by all levels of government. Therefore it should not be commodified, privatized, or traded for commercial purposes."

Bechtel withdrew its plans.

But the battle is not over. The corporate world now proposes water offset trading similar to emissions trading (see the Energy chapter). *Such trading would allow corporations to cover up with greenwash what they are really doing, and make it OK to steal water from people in one place and replenish it someplace else.*

Food and Health

I was in a Subway (a big sandwich restaurant chain, not a means of urban transportation) the other day and picked up their flyer about the

Subway FRESH program, which promotes healthy eating and an active family lifestyle. The F.R.E.S.H. pledge reads "I, _____, Feel Responsible for my health and want to live my life Energized, Satisfied, and Happy. I want to take Subway Steps to be more active, eat a variety of good foods and enjoy each step I take in creating a healthier me...." The flyer promotes physical activity and good food habits, particularly for children. *I'm thankful and supportive that there is at least one fast food chain whose business goal is* ***not*** *to sell more soda and french fries, but to limit the fat and calorie content of its foods, and to stress the importance of exercise.*

Americans, and to a lesser extent people of other wealthy countries, have serious weight and health problems. And as with other problems, we turn to the technofixes of this diet or that, and this pill or that, expecting great results for little effort. However, just as ensuring a steady earned income requires commitment and hard work, so being healthy requires commitment and hard work. Sporadic diets, exercise, or pills will not do the job. Permanent changes in diet and exercise habits are required.

Keeping your body in good condition is a part of caring for yourself and for Earth. The latest USDA Food Guidelines describe a healthy diet. The guidelines change as research progresses because we are still learning about how our human bodies function. Every pound of DRY food contains about 2000 calories, whether it is carbohydrate, fat, or protein. For a sedentary individual this is plenty for a whole day. If your intake averages only 100 calories a day greater than you burn, you will gain a pound of weight every month, because every pound of fat stored in your body contains 3000 calories.

Good health requires not only controlling food intake but also exercising the body. Exercise helps to control or lose weight, but not as much as most people would wish. Health guidelines recommend a minimum of 30 minutes of exercise three times a week. But 30 minutes of walking or equivalent low effort only burns 150 calories. Hard exercise that really gets your heart and breathing going raises the 30 minute burn to 300-400 calories. Walking, running slowly, and running fast all burn about 100 calories per mile, so it takes 30 miles to lose a pound of fat. Swimming and biking burn less. Even a heavy exercise program may not let you eat all you want.

For motivation to keep in shape, find some forms of exercise that you like enough to stay with for years. Obviously, in a green book like ECOSHIFT, I recommend outdoor activities, and preferably those that do not involve lots of high-tech equipment. See the Voluntary Simplicity chapter for more on living a low-tech life. Whatever you choose, don't start too fast. Too many people say "I started running, but my knees didn't like it, so I quit." Your body takes time to adjust to a new activity, so start easily. Plan on several months to get to your desired level. If your body really won't let you do something, try something else. There are lots of

choices out there, and every physical activity has many books written about how to do it right.

Obviously much more could be said about health. But I am not going to use ECOSHIFT space to discuss either the many possible effects of toxic products in our environment or the many alternative and holistic approaches to medicine and healing. *In general I am skeptical of New Age and mystical forms "healing". My approach is to be sensible, moderate, and mindful, and to be aware of different opinions and of what science says is true or untrue.*

My Food and Health Choices

I believe that good health is a combination of good genes, good luck, and effort. I have been blessed with the first two and I have put in a **lot** of effort. The effort involves both food and exercise.

My wife and I have made serious changes in our diets over the years, as have many others. Preceded by our children, we have become semi-vegetarian. I eat very little red meat. We use beans and cheese, chicken (free-range if possible) and fish (watching what species we consume). We try to buy milk that is from local dairies, in glass bottles, and not ultra-pasteurized, and try to avoid feedlot cows and BGH. We get lots of fresh vegetables in summer from local farmers' markets. I eat earthy-crunchy cereal for breakfast and bread for lunch. Dinner comes from a dozen different low-fat cookbooks and Cooking Light magazine and is produced in great variety and goodness primarily by my wife. We eat out about once a week and sometimes find it not as good as what we eat at home.

I got my motivation to exercise in 1975 when I learned about the sport of orienteering. Competition kept me motivated to run and now I have a deep desire to stay in good shape for outdoor activities like trail running, biking, skiing, and hiking. Since our recent move we have both joined the local running club and increased our exercise. I am now getting some exercise every day and averaging about eight hours a week.

Sustainable and Vegetarian Food

Sustainable eating has been defined as "eating in such a way as to meet present needs for food without compromising the ability of future generations to meet their own needs for food." The National Campaign for Sustainable Agriculture is working to foster a sustainable food and agriculture system that is economically viable, environmentally sound, and socially just. There is even a Sustainable Eating Magazine, subtitled

"Building Community Through Food". EarthSave International promotes food choices that are both healthy for people and healthy for the planet.

Meat and other animal-based foods, like eggs and milk, are much less energy and land efficient than vegetable-based foods. A rule of thumb in ecology states that every time something eats something else, only one-seventh to one-tenth of the energy value is passed on. A pound of meat takes seven times as much land (and water) to produce as a pound of grain, but does not contain any more calories. Yet massive areas of tropical forest are being denuded to keep us in beef. Agribusiness hog farms in the Midwest are major polluters. Veal and lamb come from young animals usually kept in cramped conditions. Red meat can cause significant health problems. These are some of the reasons that many Americans are reducing the amount of meat in their diets. Vegetarianism is not an all or nothing thing. Semi-vegetarians, like me, tend to avoid red meat and reduce meat and fish in general. Lacto-ovo vegetarians avoid all meat and fish but eat egg and milk products, which need not harm the animals involved. Vegans avoid all kinds of animal-related food. *As a deep ecologist (see the Deep Ecology chapter) I think about the possibility of a no-kill diet, in which neither animals nor plants are sacrificed to feed me. This still leaves dairy products, eggs, fruits, nuts, seeds, hand-harvested legumes, and vegetables such as tomatoes and squashes. I await a book on such a diet,* but until then "Becoming Vegetarian" by Melina, Davis, and Harrison will suffice. It describes how to improve your health while decreasing your Earth impact, no matter which kind of vegetarian you choose to be.

Production of meat from livestock in order to feed the world's meat-eaters requires 30% of Earth's ice-free land surface and contributes 18% of annual emission of greenhouse gases. Methane has 23 times as much effect on global warming as CO_2, and one-third of global methane emission is generated in the gut of cows, sheep, and goats. Conversion to a vegetarian diet is closely related to sustainability. Consider the analysis of Eshel and Martin [Eshel G. and P. Martin, 2006 . "Diet, Energy, and Global Warming". Earth Interactions 10:1-17]: "We show that a person consuming the mean American diet, which is roughly 30% animal-based, is responsible for the annual emissions of a ton and a half of CO_2 equivalent beyond those incurred by a plant-eater consuming the same number of calories." You can compare this 3000 lb difference with the table in the Energy chapter. Changing diet by reducing animal-based food has a CO_2 effect roughly equivalent to changing to a car with much better gas mileage. In addition, if everyone became vegetarian much agricultural land could be converted to biomass energy production.

Sustainability is also affected by how food is prepared, packaged, and served. Processing of food from its original form into something else requires a lot of energy and water for manufacturing. Packaging of processed food adds to this, and disposal of the packaging creates yet more problems. Microwave cooking is the most efficient form of energy use for

heating food. Oven baking or roasting is probably the least efficient, though this is mitigated when the waste energy helps to heat the home in winter. Many supermarkets offer a choice of paper or plastic bags for carrying food; paper is better as it is renewable and biodegradable, whereas plastic bags end up being burned overseas. Using your own canvas or net bags is best. Reusing paper bags and plastic fruit and vegetable bags helps too.

Sustainable food is not cheap. Americans have become accustomed to low-priced food. But Earth and its people will be better off when we become willing to pay the higher prices that represent the true cost of our food, instead of the artificially low prices subsidized by fossil fuel, mass-production, environmental degradation, government subsidies, and exploitation of animals and farm labor. Michael Pollan, well-known writer on these food issues summarizes "Eat food. Not too much. Mostly plants." The somewhat enigmatic first imperative means real food, not junk food. Some more ways to eat sustainably are discussed in the next two sections.

Organic Food

Ah, organic food. Once the realm of the hippie fringe, organic food has gone mainstream. Yet although supermarkets are continually enlarging their organic food section, it is still a "specialty" item and thus commands high prices, only part of which is the higher cost of producing it. Many of the original small organic food companies have been bought by global megacorporations. General Mills owns Muir Glen and Cascadian Farm, Coca-Cola owns Odwalla, Philip Morris/Kraft owns Boca Foods and Back To Nature, Kellogg owns Kashi, Morningstar Farms and Sunrise Organic, Danone owns Stonyfield, Unilever owns Ben and Jerry's, Horizon owns Organic Cow, etc. etc. *Should we be celebrating that organic food is becoming so popular or bemoaning that it has gone megacorp? At the moment, I think it's good to have a rapid expansion of organic food because it requires at least some level of organic farming, which is more sustainable than conventional agriculture.* But the megacorporations have a record of trying to compromise the standards of organic agriculture. The Organic Trade Association has become dominated by corporations who want looser organic standards like allowing some non-organic ingredients, even those from GMO crops. Organic Cow milk is now produced by factory cows and is ultra-pasteurized, which some argue reduces its food value. Cascadian farms produces organic TV dinners. See the article "Naturally" on Michael Pollan's web site and the Organic Consumers Association for much more on all this. *Hopefully once consumers become accustomed to eating organically-grown food, they will also demand high standards for it.*

Twenty years ago local food cooperatives and buying clubs enjoyed a big surge in popularity because they could buy organic products not then available in grocery stores. A small percentage of food consumers thereby created the current popularity of organic food. A few of the cooperatives

have turned into viable stores, but many others tried and failed. The Great Bay Food Coop, for which I was Treasurer, ended its three-year attempt at running a store for three reasons: lack of volunteer help, competition from the enlarging organic food section of the local supermarket, and the policies of mega-distributor United Natural Foods, which doesn't like to sell in small quantities. Buying clubs remain valuable because they can purchase in bulk, they eliminate retail markup, and they can buy specialty products still not in supermarkets. They face a decision about whether to deal with United, which runs its own "chain" of United Buying Clubs, or with smaller distributors like Associated Buyers. A list of food cooperatives and related links can be found on Jim Williams' web site.

A major effort to increase awareness about the origins of food and drink involves coffee, which is drunk in huge quantities around the world though it grows only in the tropics. In Central America coffee used to be grown in mixed plantations on family farms, with various kinds of fruit trees, hardwood trees, and bananas in the overstory and coffee in the shaded understory. But over the past 20 years, half of the vast areas of coffee plantations in Central America have been converted to large agribusiness operations involving new high-yield varieties grown in full sun and monoculture with heavy applications of fertilizer and pesticides. These plantations are biological deserts compared with shade-grown coffee plantations, which are diverse, stable, and sustainable ecosystems. The web site of the National Audubon Society documents that some wintering North American bird species, such as Baltimore orioles, depend on shade-grown plantations in Central America. National Audubon now sponsors its own brand of coffee, guaranteed to be shade-grown, and the Smithsonian National Zoo certifies organic shade-grown coffee . Many other sellers now specify their coffee as "shade-grown" or its near synonym, "organic". Equal Exchange buys shade-grown coffee directly from local farmer cooperatives, pays fair trade prices, and eliminates predatory "middle-men". Shade-grown family plantations provide income, wood, food, and work for local families. For the good of Earth and the beings that live on it, we need to be sensitive to the origin and the history of what we eat and drink.

Locally-produced food

A strawberry traveling across the continent potentially provides 5 calories of food energy and takes 435 calories of fossil fuel energy to deliver. Similar ratios apply to practically everything we eat. In the future we must expect more and more of our food to be locally grown. *Our grandchildren will regret that we have paved over much of our best agricultural land for parking lots and shopping malls.* Locally-grown food now has so many supporters that there is a new name for them, "localvores".

Farm stands and farmers' markets provide us the opportunity to buy locally, thus contributing both to energy conservation and to protection of farmland from development. In 2007 there were 3700 farmers' markets in the U.S. In "Deep Economy", Bill McKibben points out another advantage: "consumers have *ten times as many conversations* at farmers' markets as they do at supermarkets (ital. au.)", thus helping to restore local community (see the Ecojustice chapter).

Community-supported agriculture (CSA) involves you in the production of your own food. In a CSA farm, individuals purchase a share of what the farmer produces in a year, volunteer to help with the farming, and pick up their share of the farm's produce each week. The requirements for volunteering vary among farms. The cost of a share generally is $300-500 per year, but half-shares are often available. Some farms have additional autumn shares that can provide local food well into the winter. In 2007, the U.S. had 1500 CSAs; you can find the one nearest you by searching "CSA" on the USDA's Alternative Farming Systems Information Center web site. The upsurge of farmers' markets and CSAs has produced a resurgent interest in canning, root cellars, and other methods of food preservation.

"Reclaiming the Commons: Community Farms and Forests in a New England Town" by Donahue and Jackson, tells the story of Land's Sake community farm in Weston, Massachusetts, and describes the advantages of local food and the concurrent protection of agricultural land from development. Near me a group called "Sustainable Tamworth" encourages eating locally with frequent localvore dinners and a Yahoo e-mail group for discussion. As energy costs rise, there will be more and more incentive for locally-produced food. Although locally-grown food may not be organic and may be more expensive than supermarket food, it is far more sustainable. While the higher costs of organic and local food may come down as demand rises, we must be willing to pay the higher costs of local labor compared to agri-farms using migrant or overseas workers, and to make sure local farmers get their fair share of our wealth.

Checking Labels

My wife and I almost always check the labels on fresh fruits and vegetables in the grocery store. Although the grapes look really good, the label says they are from Chile, so I pass them up for the Ricker Hill apples from New York. I love oranges but I make sure they are from Florida instead of California, saving 2000 miles in travel costs. Hopefully, food source labeling will become the norm soon.

Producing Your Own Food

Since agriculture was invented 10,000 years ago a large majority of people have been involved in growing most of their own food. Only since the oil era over the past 100 years has cheap energy made family farming obsolete in "developed" societies. In my home state of New Hampshire, 85% of the land was cleared for agriculture 150 years ago. Now the state is 85% forested again. Producing part of a family's own food has become a recreation or pastime limited to a vegetable garden and, rarely, a pig or a few chickens. *As oil runs out I think we will see a large increase in family vegetable gardening and perhaps in cooperative farms. Producing your own food will once again become "mainstream".* H. C. Flores, in "Food Not Lawns", calls gardening "one of the most radical things you can do," because growing your own food takes power away from agri-corporations and gives it to you.

Growing food for the family can also be a significant ecocentric spiritual experience. Gardening has always appealed to many people, perhaps because it is a way of reconnecting with Earth (see the Ecopsychology chapter). Although growing flowers produces aesthetic pleasure, growing vegetables produces food for both the body and the soul. Children have a natural desire to grow things; they love to put soil and seeds into paper cups and watch what happens. Involving them in growing their own food could be an outdoor family experience with both immediate and lifelong rewards. If your own yard or community garden plot ("allotment" in Britain) is not practical, then take your children to a CSA where they can volunteer to help (see previous section).

Vegetable gardening has its difficulties and drawbacks. The finest crops can be lost in an instant to marauding woodchucks, deer, raccoons, rabbits, and insects. One gardening rule of thumb is to be sure to plant enough extra for the wildlife. Elaborate discouragement schemes such as fencing that goes underground, spreading animal and even human urine around, and box traps and relocation to wooded areas may be required. A good garden needs organic matter and all the nutrients it provides, so composting is an integral part of gardening. Composting of both food (but not meat) scraps, yard cuttings, and leaves is a natural way of recycling, and is a great way to introduce children to natural ecosystem processes. See the Housing chapter for more on composting and yards.

My Gardening

Our family had a vegetable garden for many years, at three different homes. My children grew up helping occasionally but reluctantly. Nevertheless, both daughters turned out to be gardeners themselves. One of them has a real green thumb with

both indoor and outdoor plants, including vegetables; the other is a member of a CSA. They regularly provide us with some of their excess food.

I stopped vegetable gardening about when the children left home, we retired our worn-out freezer, and a woodchuck finished off our too small garden overnight. Now we have reduced our housing footprint by moving to a condominium association that does not allow or provide for gardens. Outdoor composting is prohibited because of roaming bears. There are tradeoffs in this whole business! But I hope that some day, locally-grown food will be virtually required and vegetable gardens will sprout on our association land.

Eating Out

Americans apparently eat one-third of their meals in restaurants. Many of those meals and restaurants are fast-food chains that are widely recognized for providing poor quality foods on non-recycled plastic by underpaid employees. On the other hand, there is a world-wide Slow Food movement; there are locally-owned, often family-owned and operated, restaurants; there are vegetarian restaurants, and there are green restaurants. The Slow Food movement has become worldwide since its founding in Italy as a response to opening of a MacDonalds in 1989. Its purposes are "to counteract fast food and fast life, the disappearance of local food traditions and people's dwindling interest in the food they eat, where it comes from, how it tastes and how our food choices affect the rest of the world." It promotes "eco-gastronomy". In my area locally-owned restaurants belong to an association called Valley Originals so they can advertise jointly as an alternative to chains. Green restaurants are listed for Boston Massachusetts at Boston Green Tourism and nationally by the Green Restaurant Association. *In the "vacationland" in which I live, vegetarian options are very limited at most local restaurants. So I make a special effort to choose vegetarian items from the menu in order to support the Earth-saving movement to eat less meat.*

Housing Choices: Structure, Grounds, Location

"We – you and I and everyone who has a yard of any size – own a big chunk of this country.... As [suburban] tracts expand, they increasingly squeeze the remaining natural ecosystems, fragment them, sever corridors by which plants and animals might refill the voids we have created. To reverse this process ... requires a new kind of garden, new techniques of gardening, and, I emphasize, a new kind of gardener." – Sara Stein ["Noah's Garden", p. 16]

Location, Location, Location

The first issue of housing choice involves the three criteria for successful real estate ventures - location, location, location. Career choices discussed in the Voluntary Simplicity chapter usually interconnect with a choice of geography (see the Bioregionalism chapter) to determine dwelling location. Satisfaction with life may derive both from following a desired career path and from living in a desired place on Earth, but satisfaction can also derive from accepting one's current means of money generation and one's current living place.

Home location and work location intertwine also at the local level. Affluence, both national and personal, seems to cause increasing distance between job place and living place. Oil consumption has allowed living at long distances from work. Millions choose to live in suburbia and work in the city, or to live in the country and work in suburbia. The resulting long commutes, traffic congestion, and smog are legendary. Ecoshifters obviously recognize that long automobile commutes are unsustainable as well as a big waste of time. A hierarchy of alternative commuting options is available. From most to least desirable these are: working at home (e.g. telecommuting), walking, bicycling, public transportation, motorcycle or scooter, and car-pooling. Availability of one or more of these should play a significant role in determining housing location.

Commuting

For many years, I lived 1 1/2 miles from my workplace. I had many options for my short commute: walk, ski, bike, run, shuttle bus, and car, and even two route choices, woods or campus. Earlier, from a more distant home I used a motor scooter. On the other hand, my wife's career took her 30 miles away to the state capital for many years; she was fortunate to be in a long-lasting carpool. In these days of two-career families and multiple jobs, finding a sustainable home-work axis can be difficult.

In my state of New Hampshire, and my Gulf of Maine bioregion, many people feel the need to be close to nature (see the Ecopsychology chapter), and want to live on a 2-acre or larger house lot out in the woods on some back road. This means, of course, that they have to get in a car to do almost anything except walk in the woods or look out their window. It can be 5, 10, or 20 miles to "town" (out west even farther) for groceries, recreation, hospital, stores, library, and restaurants. *As gasoline price rises and gasoline eventually disappears, I wonder what they will do. Somehow I can't imagine solar-powered electric cars traveling miles over rough country roads for a loaf of bread. Maybe local buses will rise again in rural areas.* Ecoshifters will clearly look for home locations close to the necessities and amenities of "town", preferring to walk or bike if possible, while still maintaining access to sufficient natural or green space. All this raises another question for future Ecoshift debate - what kind of urban/suburban/rural combinations can be attained, or how large should communities be and how should they be structured? Ian McHarg's classic book "Design With Nature" remains an excellent discussion of how to build communities that conform with rather than oppose the natural world. If it is now outdated, it is only because it assumed that the automobile is here to stay.

A related issue concerns those people who want to see as much of "nature" as possible from behind their windows and so choose home sites on mountainsides or ocean shores. *They want to "own" a fantastic view while they deteriorate the view for everyone else. Just last night I went to a house concert at one of the many such houses that make the mountainsides around here look like suburbs. I really dislike these houses but I held my tongue with the proud homeowners who were my host.*

Population growth combined with fewer people per house, bigger houses on larger lots, and vacation housing all mean that land is gobbled up for housing at a very rapid rate. Increased crowding in big city suburbs makes people leave for less densely populated areas, to which they bring their demands for the high levels of public service that the densely

populated areas have provided. Consequently taxes increases for everyone. *In many parts of the country, all land that is not protected* ***will*** *be developed.* The pace of "development", together with realization that new houses and businesses in our town or county cost the rest of us money, has led to efforts to control growth and to protect land. Eben Fodor's "Better, Not Bigger" documents these and many other adverse effects of growth, and describes how to fight such growth at the local level. Another way to limit growth deals with the question of immigration (see the Population chapter).

My Housing Choice

After thirty years in the same suburban house and one-quarter acre lot, my wife and I moved into a town house condominium in late 2005. We used the opportunity to relocate to the White Mountains of New Hampshire where outdoor recreation and the natural world are a way of life, while staying in our Gulf of Maine bioregion. We selected our location to be within walking distance (two miles) of a town (North Conway) with access to regional bus transportation, as well as close to a number of trails for hiking and running. Our location comes at the price of also being a Mecca for recreational shopping.

We simplified our lives by eliminating much house and yard maintenance for ourselves, at the cost of losing control over how this maintenance is done by the condominium association. By living in a building with five other housing units we hope we have reduced our housing footprint on Earth. Our association has 90 housing units on 80 acres of land, with enough clustering so that about 30 acres is undeveloped woods frequented by bear, deer, fox, white pines, and chanterelles.

Reducing Your Housing Footprint

Shelter or housing is a primary human need, but housing is also a primary way that affluent individuals and affluent societies choose to show off their affluence. A huge house on a huge lot, preferably with a grand view, indicates great success in a highly competitive, social-Darwinian world. Building a "dream house" is the ultimate goal for many.

But big houses and new houses, big buildings and new buildings, all have associated big energy and environmental costs. Because a society's comfort range for temperature seems to get narrower and narrower as the society becomes more affluent, we spend more and more energy on heating and cooling of houses and workplaces. Travel to and from homes to work and play locations adds to energy costs. So does mowing, fertilizing,

watering, and pesticiding those acres of grass that so many are enamored of.

In opposition to such expressions of affluence, ecoshifters try to reduce the size of their home and to reduce its energy consumption (see the Energy chapter). A part of this is reducing the amount of possessions, thus reducing "clutter" and the need for a larger house or a storage locker (see the Voluntary Simplicity chapter). An ecoshifter finds new homes for items that are no longer used (clothes, books, furniture, equipment), or appropriately recycles unusable items.

I am continually amazed by the number of people I know who actually enlarge their house or move to a larger one after they retire just so they have room for all their children and grandchildren to visit. An ecoshifter, of course, tries to have fewer grandchildren in the first place (see the Population chapter).

What is an appropriate housing density for an ecoshifted Earth? What goal should we be striving toward in the long term? Megalopolis cities have serious problems with overcrowding by both residents and commuters, with lack of connection with nature, and with the need for vast and distant support areas that contribute food, energy, and materials. On the other hand, high population density allows energy efficient public transportation and leaves more room in other places for the natural world. What is the optimum size or size distribution for cities? How can cities be made more self-supporting, more friendly, and more nature-related? Discussion of and answers to these and many related questions will be part of Ecoshift, but are beyond my scope in this book.

Ecovillages

Some kind of intentional community attracts some ecoshifters because community living offers many opportunities to reduce personal and group impact on Earth. Communes have come and gone in many cycles through human history. Intentional communities can form for a wide variety of spiritual, environmental, economic, and personal reasons. The Intentional Communities web site tries to keep track of and to provide information about perhaps 2000 existing and forming communities worldwide. Its directory can be searched using a variety of criteria.

A few large, Earth-centered communities exist. Auroville in India seeks human unity in diversity and living in harmony with nature and the environment. Its population currently is 1,800 people, but its influence is global. Findhorn in Scotland bases itself on a personal source of inner divine wisdom, cooperation with the intelligence of nature, and service to the world. The Findhorn Ecovillage is a pioneer in sustainability and enhanced quality of life. This community of several hundred people has inspired and educated thousands more who have taken its message and methods around the world. The Findhorn Ecovillage helped to found the

Global Ecovillage Network, which links and supports sustainable settlements. Its directory lists ecovillages world-wide.

Of the many ecovillages in the United States I will just mention three. The Farm in Tennessee began in 1971 as a classic commune, but now includes an ecovillage training center as well as its older midwifery center and various cottage industries. The Farm is the home of Albert Bates, author of "The Post-Petroleum Survival Guide and Cookbook" . In New York, the Ecovillage at Ithaca is an intentional community and a non-profit educational organization that demonstrates an alternative model for suburban living, providing a "satisfying, healthy, socially rich lifestyle, while minimizing ecological impacts". Earthlands in Petersham MA supports and encourages individuals "striving to live lightly, creatively and lovingly as global ecological citizens". It is primarily a retreat center with rustic simple living, organic and vegetarian food choices, and solar electricity. Earthlands demonstrates Deep Ecology principles (see the Deep Ecology chapter) and encourages individuals to "live with greater material simplicity, appreciation for life, and personal empowerment."

Co-Housing

A co-housing community deliberately develops a strong sense of community while preserving family privacy. Some or all of the property may be jointly owned and managed by consensus. Both indoor and outdoor common areas are usually available for some shared meals, for relaxation, and for recreation, but each household also has its own house or apartment. Diversity of residents may be highly valued, and sustainable and simple lifestyles may be favored. Cambridge Cohousing in Massachusetts, states:

> "We will emphasize conservation, recycling, non-polluting energy sources, and other environmentally sound practices. We share a commitment to the idea that cooperating in the endeavors of daily life brings the pleasures of sociability, greater economy of resources and effort in daily tasks, the warmth of an extended family and the probability of a rich variety of friendships. In our interactions, we seek a balance between privacy in our own homes and our wish to be with others, living independently as well as interdependently. We want to share and interact with each other through social activities, celebrations and practical tasks, such as cooking, dining, child care, maintenance and through other shared work and problem solving. Honoring our varied experiences, we intend to follow a consensus-based process respectful of all points of view. We believe that through

> living together and especially in working through our differences, we become stronger, more peaceful contributing members within the larger, global community."

Multi-family housing is as old as humanity. I expect that some ancestral couple tens of thousands of years ago was the first to want a private cave just for their immediate family. Since then there has always been a tension between multi-family dwellings that we now call apartment houses, condominiums, row houses, or town houses and single family dwellings, often on relatively large plots of land. In North America, at least, affluence and vanity have caused proliferation of the mega-mansions described at the start of this chapter. For the "middle class", the drive to own one's home has created sprawling suburbia. Population growth, the energy crisis, and deep ecological thinking all indicate that mega-mansions and suburban sprawl are not sustainable or ecocentric. We need a swing back to multi-family dwellings. Multi-family dwellings, even without the shared community values of co-housing, still may include common land and a community sense brought about by close proximity. The Nubanuset Neighborhood in Peterborough NH includes one-, two-, and four-unit dwellings, an organic farm, shared office space, a common house, and common land.

Green Buildings

Green building includes modification of existing buildings or construction of new buildings in ways that reduce energy requirements from off-site, that improve utilization of water and building materials to reduce adverse impacts on Earth, and that improve health of building occupants. Such construction can vary from adding insulation to an existing home through generating solar power on rooftops to new buildings made from mud and straw bales.

The first step that every homeowner and renter can take involves reducing heat loss in winter. Maintaining a given inside temperature requires heat input equal to the amount of heat lost through walls, doors, windows, and roof. The heat loss is the product of an insulation factor and the temperature difference between indoors and outdoors. So heat loss can be reduced both by increasing the insulation factor and by reducing the indoor temperature. For a given insulation factor, heat loss is directly proportional to the indoor-outdoor temperature difference. Turning the thermostat down from 65 to 60ºF reduces heat loss by 14% when outdoor temperature is 30ºF and 9% when it is 0ºF. By setting home thermostats one or two degrees cooler each winter and wearing more clothes it really is possible to get used to a cooler home. I am now happy with 62-64ºF in daytime and 56ºF at night.

Windows are responsible for a large portion of heat transfer between indoors and outdoors. In winter weather stripping and caulk can be used to fill any place that cold air infiltration is felt with a bare hand. Condensation or frost on windows indicates excessive heat loss; plastic sheeting (heat shrink or stretch) and double-stick tape can eliminate this. Shades, window quilts, and curtains further reduce heat loss. The same techniques can be used to reduce heat gain from outside in the summer. On hot days windows and shades should be closed in daytime to keep heat out, then opened after outside temperature drops below inside temperature. When it is cooler outside than in, opening one or two windows on the lowest and highest floors allows warm inside air to move out the upper windows, which draws cooler outside air in the lower windows. This is "free convection" and free air conditioning. An exhaust fan in an upper window or attic further helps this air flow.

Increasing the amount of insulation in the home is an additional, though initially more expensive, way to conserve energy. Double-glazed storm windows, or better, triple glazed, can also be installed. Unfortunately, federal tax credits are no longer available for energy conservation actions such as window replacement, reinsulation, new water heaters or furnace, and heat pumps.

Trees around a home can help a lot in controlling energy gain and loss. In 1976 I published an article called "Trees Modify the Urban Microclimate" [Journal of Arboriculture 2:121-127], in which I calculated that the cooling created by evaporation of water from the leaves of a single large tree was the equivalent of 10 room-sized air conditioners. This number entered the literature of benefits of trees and hopefully has had some effect on increasing urban greenery. In addition to the air conditioning effect, the energy budget of a house can be significantly improved by having deciduous trees to the south (in the northern hemisphere), where they provide shade in summer but allow sun in winter, and evergreen trees and shrubs to the north and northwest where they reduce the impact of cold winter winds.

Humanity got along without air conditioning for millennia. Our addiction to it only developed in the past 50 years. In 2005 air conditioners burned up the equivalent of twice the U.S. production of ethanol, a very significant amount. The fact that air conditioning is not sustainable is on a collision course with global warming. *We probably need to learn to live without it again.*

Adding photovoltaic panels to a house, garage, or lot is relatively simple and is becoming less expensive, especially with the recent continuation of a federal tax credit. A battery storage system is no longer necessary as more electric companies and states allow electric meters to run backwards. Solar panels feed energy into the electric grid when it is sunny, thus reducing net electricity cost. Some ecoshifters aspire to live "off the grid", but this usually requires banks of storage batteries that

need to be replaced every ten years, with consequent recycling or disposal issues.

If you must renovate part or all of a house, there are increasing opportunities to use local materials, to reuse materials from demolished buildings, and to use materials that are downcycled from other materials, e.g. plastic decking. The directory of the Building Materials Reuse Association has lots of links to local sources.

Building a new "green" house appeals to a considerable number of people. The number of information sources related to green building is increasing very rapidly, see, for instance, the U.S. Environmental Protection Agency Green Buildings web site. Old construction methods, such as straw bales and mud, and newer methods such as mostly underground houses and literally green roofs provide a variety of choices. Green roofs normally include a sealant layer, a drainage layer, soil, and plants. Such a roof is cooler in summer, insulated in winter, and filters pollutants from roof runoff. "Building Green" by Snell and Callahan covers many green building methods comprehensively, as do "The Green Self-build Book" and "The New Natural House Book" by David Pearson.

The U.S. Green Building Council certifies green buildings through the LEED (Leadership in Energy and Environmental Design) Green Building Rating System, which is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. In "Blessed Unrest" [p. 153], Paul Hawken says that the Green Building Council "may have had a greater impact than any other single organization in the world on materials saved, toxins eliminated, greenhouse gases avoided, and human health enhanced." The system has standards for a variety of structures, including commercial buildings, schools, and homes. In the U.S. 6% of new building construction seeks LEED certification. Look for the Council's extensive "Green Building Links" page.

Green construction also includes such things as pavement that drains or is grassed. Whole cities, such as Portland OR and Seattle WA, are developing "green streets", which include bioswales for cleaning runoff, and low-pollution paving materials.

Before reveling in the glorious possibility of designing your own green dream home, an ecoshifter should decide whether is it better to build a new house or to live in an existing house as greenly as possible. In an ideal world/country/society of declining population there is little reason to build a new house and thus expand the housing footprint of humanity at the expense of all other living beings. Even with the rapid population growth that the U.S. is experiencing because of immigration, there is an arguable question about whether a new house on its own plot of land is justified in an ecojustice sense (see the Population and Ecojustice chapters). A related question is whether it is ecocentric to own and live on a large area of land in order to protect it from development, perhaps through conservation easements. There are no obvious right answers here; continued discussion will be part of Ecoshift.

Renaturalizing the Yard

Some tens of thousands of years ago some cave-dweller was the first human to transplant a flowering plant from the wild to the front of a cave home. This simple act brought the concept of a "yard" into the evolution of our known Universe. The term "garden" connotes both an area for growing food and an area for aesthetic appreciation, which are two quite different purposes. I use the term "yard" here to connote an area around dwellings and other buildings that is developed or modified solely for aesthetic purposes. *Though some observers may not think a given yard has any aesthetic qualities, the owner probably thinks it is just fine.* The aesthetic development culminates in estates with vast areas of lawns and formal gardens tended by dozens, and sometimes hundreds, of gardeners. Such development moves the yard farther and farther away from any natural system or state. Humanity seems to prefer geometric arrangements of exotic species over natural arrangement of natives. Such yards are clearly anthropocentric rather than ecocentric.

Renaturalizing a yard restores the normal functioning of a piece of Earth. Ecocentrism replaces desire for a lawn and formal garden with a recognition of the beauty of the local natural ecosystem. Replacing mowed grass with native trees, shrubs, and herbs allows the native natural system to recover and produces a vital biology where there was a biological desert. Replacing exotic species with native ones eliminates the scourge of species that have escaped and continue to escape from yards into nature with ecologically disastrous results (see the Conservation Biology chapter). Natural yards replenish themselves with nutrients from decomposing leaves, twigs, and wood. Natural yards need no irrigation as they are suited to the native weather conditions. Natural yards take no fossil fuel for maintenance. Natural yards generally need no pesticides, though one could argue that protecting elms, hemlocks, and other native species from imported pests is acceptable. "Noah's Garden" by Sara Stein provides lots of information about how to renaturalize and reduce the artificial footprint of a yard.

Forests and grasslands have worked well for many millions of years because of internal recycling. Nutrients that fall to the ground as dead leaves, twigs, and stems get returned to the soil by decomposition. Removal of grass cuttings, leaves, and branches from artificial yards also removes nutrients and organic matter, which are in limited supply. Repeated removal causes soil impoverishment; energy-requiring fertilizers and peat moss mined elsewhere become required. Even if plant materials are ground and composted and then returned to the soil surface, loss is only partially mitigated, because some leaching and volatilization occurs from the compost heap. Enhancing compost with kitchen waste can offset

the loss. If grass clippings, leaves, and slash are ground and left in place, then all the nutrients are kept on the ground they came from and true recycling occurs. The yard then operates naturally.

Voluntary Simplicity - Opting Out of Consumer Culture

"No man ever stood the lower in my estimation for having a patch on his clothes; yet I am sure that there is a greater anxiety, commonly, to have fashionable, or at least clean and un-patched clothes, than to have a sound conscience." – Henry David Thoreau ["Walden"]

"Happiness is not a possession to be prized, it is a quality of thought, a state of mind." – Daphne du Maurier ["Rebecca"]

"We can conserve energy and tread more lightly on the earth while we expand our culture's capacity for joy." – Richard Louv ["Last Child in the Woods"]

Now we come to the first chapter of this book that describes a holistic and committed response to the problems of humanity and Earth. Voluntary simplicity, or living simply, is a choice to turn away from our pervasive consumer lifestyle in order to live a less hectic and more enjoyable life, and perhaps to reduce our individual and collective environmental impact.

I prefer the term "voluntary simplicity" to "simple living" because it emphasizes that this is a voluntary choice of lifestyle, an option, which we are not forced into. Living a life of simplicity is not the same as living in poverty, because poverty is not a choice but a forced necessity. Simplifying one's life does not need to be an all or nothing process. It is not deciding to take a tin cup and wander the streets seeking alms, though that too is a choice some make. It is, rather, a choice to slow down, to live frugally, and to enjoy life free of many of the multitudinous products and demands of our culture.

Simplicity is not simple; it takes deep desire and commitment to resist the incessant drumbeats of advertising, of making more money, and of patriotically buying more than you can afford in order to keep our economy growing. Choices to live more simply will not be maintained

without some underlying set of moral or spiritual beliefs. Guy Claxton says "advocacy of 'voluntary simplicity' or any other significant lifestyle change, which does not understand [the requirement] that these habits are the visible tip of a massive and intricate belief system, is bound to increase frustration, guilt, hostility, and thereby generate heat and friction - but not much motion" [quoted "Exploring Deep Ecology" by the Northwest Earth Institute]. Development of such a belief system is the subject of ECOSHIFT's Part 4 "Changing Human Spirituality".

Duane Elgin, author of the classic "Voluntary Simplicity" book, describes voluntary simplicity as leading a life that is outwardly more simple, and inwardly more rich. Freeing ourselves from some of the demands of our culture allows us to enjoy our life more. We may make such choices not necessarily from a desire to reduce our adverse impact on Earth, but maybe just to live a more rewarding, fulfilling, and happier life.

In "Radical Simplicity", Jim Merkel lays out his program for achieving an extreme form of simple living. He uses "Your Money or Your Life" by Dominguez and Robin to plan for financial self-sufficiency, Ecological Footprint Analysis (see the Sustainability chapter) for determining a personal footprint and how to reduce it, and a sense of place for inspiration (see the Bioregionalism chapter).

The remainder of this chapter (and much of this book) describe significant lifestyle changes. *However, attempting to make lots of changes all at once is overwhelming and counter-productive. In working toward simplicity you may decide to choose just one area to concentrate on for a year (e.g. time scheduling, travel, job, money, clothes, equipment). By then your new practices in that area will be automatic and natural and you can move on to another area. It is important to remember that we are all in transition, we are each in different places along a continuum of change, and we are all changing at different rates.*

Money Choices

Having lots of money and lots of things does not seem to make people happier; it just makes them more frantic and overworked. Why else do we hear so much about "downshifting" and "getting out of the rat race"? The classic book "Your Money or Your Life" by Joe Dominguez and Vicki Robin describes a process for getting out of the rat race and becoming able to enjoy life more. The process involves learning to be frugal, estimating what income you ultimately need, working hard to save and invest the required amount as quickly as possible, and then living off of savings for the remainder of a freeing, rewarding life. This book has helped many people to realize that they do not need to slave forever in work they don't enjoy in order to have lots of money to spend on things that don't really create happiness. Dominguez and Robin founded the New Road Map Foundation, which now carries on their work through the Financial Integrity program, with the motto "Transform your relationship with money".

The money part of voluntary simplicity involves learning to save instead of to spend, to reduce "wants" that cost money, and to determine the minimum income really needed in order to be satisfied. *There seem to me to be three choices of life path:*

A. *working hard at a well-paying but not necessarily likeable job for as short a time as possible and accumulating enough money to "retire" young, then enjoying the rest of life, doing gratifying but low income work if desired;*
B. *choosing a moderately-paying but mostly enjoyable career and working until "normal" retirement age; or*
C. *choosing a (probably low-paying) labor of love and working at it for a lifetime.*

Obviously there are millions of variations on these three basic scenarios. Dominguez and Robin direct much of their attention to choice A. I chose B. I have many friends who have chosen C. There is no one right way, but the principle is that the more you can reduce your need for income the more likely you are to find satisfying work that can provide that income.

Consumer Choices

Our current "western" culture, which we are trying to export throughout Earth, involves conspicuous consumption, showing off in appearance and possessions, ostentation, big houses, fast and expensive cars, second and third homes, and lots of "toys" for adults and children. A PBS documentary titled "Affluenza" defines this syndrome as:

1. "The bloated, sluggish and unfulfilled feeling that results from efforts to keep up with the Joneses,
2. An epidemic of stress, overwork, waste and indebtedness caused by dogged pursuit of the American Dream,
3. An unsustainable addiction to economic growth."

"We rarely have wants for goods that do not exist" Peter Shrag once remarked in the Saturday Review. In other words, we cannot want something until someone produces it and then convinces us that we need it to make our life easier, or happier, or healthier. Shopping is supposedly as American as apple pie, but what a cost it induces in time, indebtedness, and impact on Earth! The Media Foundation, publishers of Adbusters magazine, invented "Buy Nothing Day" on the day after Thanksgiving to help raise awareness of the adverse impacts of consumerism. (I finished

writing this book on Buy Nothing Day 2008, the very Black Friday when a Wal-Mart employee was trompled to death by an onrushing horde of consumers.) The Media Foundation wants to create a new media culture that does not have commercialism as its heart and soul.

It takes a powerful commitment to resist advertising in our time. The commitment can come from the ethical, spiritual basis behind voluntary simplicity. It can come from a belief that humanity must decrease its impact on Earth. Or it can come just from recognition that many commercials are ridiculous and stupid and that the needs the advertised products appear to meet are manufactured by the advertisers themselves. With commitment it is possible to learn to use the TV mute button, to be blind to ads in newspapers and magazines, to eliminate junk mail, and to realize that buying something is not really the route to health and happiness.

A variety of methods exist for reducing junk mail, spam, and junk phone calls:

- The Center for Democracy and Technology has forms for opting out of junk mail.
- You can also request not to get any unsolicited catalogs through the Direct Marketing Association.
- You can get off of mailing lists for specific catalogs at Catalog Choice.
- For catalogs you choose to receive, you can ask the company to reduce their mailing frequency to quarterly or annually.
- You can opt out of credit card solicitations at OptOutPrescreen.
- If you put your phone number on the Federal Trade Commission's National Do Not Call Registry, then it is illegal for businesses to cold call you (non-profits and political parties are exempt). Apparently it is already illegal for businesses to cold call **any** cell phones.
- When you get junk mail with business reply envelopes, follow Rachel Kerley's suggestion (formerly on the Simple Living Network web site) to stuff it all (including the outside envelope) into the reply envelope and send it back. I write "Stop Junk Mail" over my address. The junk mailer **must** pay the postage on those business envelopes and the heavier and thicker it is, the more they pay. Even if this doesn't really help, it makes you feel good.
- To reduce e-mail spam, try to prevent your e-mail address from being listed on web sites. Spambots are programs that spammers use to "harvest" valid e-mail addresses from any and all sites, including PDF documents. Google your e-mail address to find where it is, then e-mail the webmasters of those sites and ask them to remove your address. If your e-mail address must be on a site, use a graphic image of it instead of text; here is my unharvestable e-mail address **tony@ecoshift.net**; it is a GIF image.

Resisting advertising and reducing buying can come easily to a single adult, but becomes more complicated when living as part of a family. *I have been married for 48 years and have two daughters and four grandchildren. Though my wife and children (and their spouses) have been very supportive of and join in my efforts to simplify, family desires do make serious lifestyle changes more difficult.* The Northwest Earth Institute has developed a new study group program called "Healthy Children, Healthy Planet", which addresses issues of consumerism, advertising, and children. Greg Rowland [quoted by Jonathan Freedland in Resurgence, March/April 2006, p.41] says in response to advertising-induced demands for food and other stuff, "The real question is why are parents not strong enough to say 'No'? It's because they feel guilty. Giving in and buying stuff is the easy way of parenting for 'time-poor' parents."

Our society's great emphasis on gift-giving, not only at Christmas but at manufactured holidays like Valentine's Day and Halloween, drives further buying. Voluntary simplicity greatly reduces purchase of holiday gifts. Alternatives for Simple Living lists a variety of non-consumer alternatives for Christmas, such as monetary gifts to appropriate non-profit groups, service gifts, or home-made certificates for outdoor activities.

Voluntary simplicity involves making purchasing choices that are governed by the Earth-centered and community subject matter of earlier ECOSHIFT chapters on Energy, Food, and Housing. Choices include buying local, American, green, free-trade, indigenous, and recycled products (for instance on the RealGoods web site), as well as support for locally-owned food stores, book stores, hardware stores, etc. *But watch out for green-washed items like the "eco-jacket" of 100% organic cotton, which is made in China!* Voluntary simplicity tries to avoid the corporate giants who are controlling our lives and destroying Earth's support systems.

Time Choices

For many people, choosing to live more simply involves time rather than possessions. Current American culture, at least, must be the most highly scheduled culture the Earth has ever known. What ever happened to "free time"? We rush to work, taking a lot of time commuting to distant jobs. We ferry children around to the many activities we believe are good for them. We volunteer for many causes that we believe in. And we spend enormous amounts of time, in response to advertising, shopping for things we don't need and won't use. Then we collapse in front of the TV in order to mindlessly recover from our scurrying.

Learning how to manage time better can involve many lifestyle changes and takes the same deep commitment as other forms of

simplicity. Simplifying life means learning to make choices, to think before saying **Yes**, to say **No**, to give up commitments, to live close to work, to work reasonable hours, and to reduce the scheduling of children.

Simple living involves at least thinking about, if not acting upon, those bumper stickers that say "Kill your TV", "Kill your computer", and "Kill your car". All these are time wasters. All these are interactions with machines rather than with real people like your children. *And I would add, "Kill your headphones". It is difficult to be in touch with your surroundings and the Earth with headphones on. Kill them and learn to listen to the birds, the wind, the streams, and, yes, even the traffic.*

An important debate within the Great Turning is whether computers and global communication, such as the World-wide Web are good or bad. Jerry Mander, in "In the Absence of the Sacred", argues that such communication is destroying local communities and particularly local native sustainable cultures. On the other hand, Duane Elgin, in "Awakening Earth", argues that global interconnectedness is necessary if we are to move through the present crisis. Obviously, developers of the web sites mentioned in ECOSHIFT believe Elgin rather than Mander. *Apparently I do too, or I wouldn't have written this book on the web. I believe the internet, in general, helps to build global community, even though it can also be a tool for disinformation and falsehood.* But the computer, which was originally intended to simplify life by eliminating hand calculations and hand-written record-keeping, has actually made life much more complicated. We are now subject to overloads of information on the web and of communication by e-mail. Computers have not even been able to produce the desired "paperless office". According to the New Scientist of November 22, 2003, the world's offices used 43% more paper in 2002 than they did in 1999! Simplicity with respect to computers may mean just keeping their demands on our time in check and using them for "business" rather than for recreation. *I respect and admire those few remaining people I know who have resisted getting involved with computers at all.*

For Earth-centered people, simplicity means spending less time watching television and playing video games, less time in team sports, less time in shopping, and more time in nature, especially with the whole family. It means taking walks in the woods and fields, learning the birds, the flowers, the trees, the clouds, and the stars. It may involve hiking, backpacking, and camping out. It involves staying in your own bioregion and getting to know it really well (see the Bioregionalism chapter).

Simplicity Choices

Choosing a life of simplicity involves more than just getting control over time, money, and buying. It involves learning simpler and more rewarding ways of doing things. I can only describe a few of them here. Simplicity involves rejection of addictions or learning how to avoid

becoming addicted. This doesn't necessarily mean alcohol, tobacco, or coffee. It means addiction to money, power, shopping, possessions, and even many forms of recreation.

A frequent first step into simplicity involves getting rid of "clutter". All the stuff that we are talked into buying accumulates. It seems that no matter how much we have, it is never enough to satisfy. There is always a new gadget, a new technology, without which life will not be worth living. Exercise and recreational equipment is bought and not used or used only briefly. *(*All my cross country skis come from the Dover, Massachusetts, town dump where they are left, still in fine condition, by their too wealthy former owners.*)* New furniture gets bought but the old furniture is kept. People rent space at storage facilities, build additions, or even move to bigger houses in order to store their accumulations. Getting rid of clutter takes time and commitment to do right by selling things or giving them away, by trying to find the right new home for each item, and only in the last resort by recycling or discarding to a landfill. The rewards for reducing clutter include the satisfaction of disposing of things that we will probably never use, the knowledge that we have saved our children a lot of hassle after we die, and the reduction of temptation to buy more useless things in the future.

Simplicity means avoiding the latest technological tools, kitchen apparatuses, plastic battery-operated toys, media and communications equipment, and other modern marvels that sooner or later break. In our throwaway culture repair shops have become scarce and most broken items are chucked and replaced by newer but not necessarily better versions. Simplicity means walking and running, which are practically free, instead of buying expensive indoor and outdoor recreational and exercise equipment. Simplicity often means using manual tools, which rarely break and last almost forever. Though it may take longer, manual tools provide both exercise and greater satisfaction than using the latest gadget machine.

Simplicity can help to create **real** family time. This does not mean standing by chatting with other adults while your child plays soccer. It means exercising together: running, playing tennis, swimming, hiking, or orienteering. It means eating meals together with the TV off. It means playing games together. It means getting out in nature, not watching Animal Planet or the Discovery Channel. For the importance of nature time for children see the Ecopsychology chapter and Richard Louv's "Last Child in the Woods".

When we spend less money on stuff and junk food and watch less television and spend less time on the computer, what will we do with our time and money? Society needs to find other ways to circulate money. It needs to change the Gross National Product from a record of how fast we can buy stuff and trash it to what activities we support and what we learn. We can start to change the economy by spending our new-found time and money on theater and the arts, on lifelong education, on nature

study, and on exercise. The result will be a different kind of life, one that is more enjoyable, more relaxed and healthier, more studious and knowledgeable, and more rewarding.

Solo Backpacking

I have found solo backpacking to be excellent practice for living simply. I learned how little a person really **needs** in training for and then through-hiking the Appalachian Trail in 1995. Though I backpacked only small parts of the Trail (my expedition with Warren Doyle is another story), I have since enjoyed light-weight backpacking on numerous multi-day trips. Everything I need for up to seven days outdoors I can carry in a pack that weighs less than 30 pounds, including food and water. By resupplying food at 5 to 7 day intervals I can go on indefinitely except in winter. The goal of minimizing pack weight creates simplification by eliminating "wants". And I really enjoy being alone in what I call the "real" world, as opposed to the artificial human-created one.

Voluntary Simplicity Sites and Workshops

Although prophets have preached the virtues of voluntary simplicity for millennia, the current simplicity movement has a sounder base in opposition to the consumer culture and in respect for all of creation on Earth. An increasing number of resources and organizations are available to help with learning to live more simply.

The Simple Living Network is a fine source for links and books. Choose "Resources" for the many books you can order directly. Choose "Beginners" and cruise the Web of Simplicity. This is a very rich site. Financial Integrity, founded by Joe Dominguez and Vicki Robin, has study guides on low consumption and simple living. Alternatives for Simple Living has comments, links, and books and is especially good around Christmas.

Curricula for simplicity study groups are available from the EcoTeam program of the Empowerment Institute, Cecile Andrews' Circle of Simplicity, and the Northwest Earth Institute. The Granite Earth Institute, with which I am associated, is the New Hampshire affiliate of NWEI. Such groups create a community of like-minded people who support each other in the difficult and lengthy process of changing personal lifestyles. *I have heard this called "preaching to the choir", but even the choir needs continued motivation and support to be permanent .*

Elgin's Ecological Ways of Living

Much more could be, and has been said about choosing to live more simply. I will just paraphrase Duane Elgin's "Common Expressions of Ecological Ways of Living" from his classic book, "Voluntary Simplicity" [p. 32-35]. Those choosing to simplify life tend to think and act in a number of the following ways:

- Recycle metal, glass, and paper and avoid plastics;
- Buy less clothing, accessories, cosmetics, and seasonal presents;
- Eat more natural, healthy, and simple foods;
- Reduce possessions by passing them on;
- Decrease the need for transportation, and select more sustainable forms;
- Refrain from buying goods and services from unethical companies;
- Select preventive and holistic health care;
- Develop personal physical, emotional, mental, and spiritual potentials;
- Spend more time and energy on family, friends, and community activities;
- Treat both genders equally while recognizing differences;
- Use nonverbal communication where appropriate;
- Relate to individuals and community with caring and concern;
- Choose fulfilling and socially useful careers;
- Express support for the poor, for justice, and for equity world-wide;
- Support ecocentric causes with non-violent behavior;
- Revere and care for nature and Earth.

Elgin concludes the list by saying "Because there is a tendency to emphasize the external changes that characterize simpler living, it is important to reiterate that this approach to life is intended to integrate both inner and outer aspects of existence into a satisfying and purposeful whole."

PART 3 – CHANGING HUMAN CULTURE

Sustainability: The Current Buzz Word

> "In order to approximate a sustainable society, we need to describe a system of commerce and production in which each and every act is inherently sustainable and restorative." – Paul Hawken ["A Declaration of Sustainability", The Utne Reader, Sept/Oct 1993]

> "But we're stuck. Even environmentalists are stuck. And what we're stuck on is our belief (or hope) that western market capitalism can somehow be greened or 'eco'd' enough to play a positive role in reversing climate change. As Curtis White … explains, 'the so-called greening of corporate America is not as much about the desire to protect nature as it is about the desire to protect capitalism itself. Environmentalists are, on the whole, educated and successful people, many of whom have prospered within corporate capitalism. They're not against it. They simply seek to establish a balance between the needs of the economy (as they blandly put it) and the needs of the natural world.' This is another way of saying 'we want our cake and we want to eat it, too.' And it just is not possible." – Susan Meeker-Lowry ["Eating Cake". Conway Daily Sun, April 25, 2007]

Sustainability! Companies are promoting their role in it. Politicians are talking about it. Communities are trying to do it. Sustainability is the new buzzword. But what does it really mean? Apparently different things

to different groups, or, perhaps, whatever the speaker chooses it to mean. *I'm pretty sure that almost no one really understands what it will take for human society to become fully sustainable.* Everyone knows that our consumption of "natural resources" cannot go on indefinitely but few of us are willing to lower our rate of that consumption. Sustainability really means changing the system to the point where "use up" or "consume" are no longer useful terms.

Human societies have been running out of "natural resources" for millennia. Cultures have foundered as population growth and climate changes combine to reduce agricultural and forest productivity. In America Europeans moved west through the 18th and 19th centuries as food and wood production in the east decreased. In 1864 George Perkins Marsh in "Man and Nature" thoroughly documented extinction of species and depletion of forests and water worldwide.

Sustainability rose toward the top of the environmentalist agenda around Earth Day 1970. Kenneth Boulding [1966. The Economics of the Coming Spaceship Earth. Sixth Resources for the Future Forum on Environmental Quality in a Growing Economy, Washington, D.C.] wrote about the difference between a "cowboy economy" with unlimited resources and a "spaceship economy" of finite resources. Now, over 40 years later, humanity remains deeply committed to the cowboy economy, in which "production, consumption, throughput, and the GNP [are] sufficient and adequate measure of economic success". Garrett Hardin wrote a seminal article titled "The Tragedy of the Commons" [Science 162:1243-1248]. He used a metaphor of individual rights to common pasture in the 18th century; whoever grazes the most cows on the common gets the most milk. When individuals all have free rights to a common resource, it is in each person's best interest to maximize their own use of that resource. So it inevitably gets overused; this is the tragedy of the commons. At the same time, Paul Ehrlich and John Holdren [Science 171:1212-1217] defined human impact on Earth as Population x Affluence x Technology. Obviously all three are increasing rapidly, and conversely, reduction of any one will reduce human impact proportionally. Meadows *et al.*, in "Limits to Growth" ran computer models of Earth's resources and economy into the future, showing that crashes of P, A, and T were very likely within 100 years. Their work was extremely controversial, but they found no reason to change their basic conclusions in "Limits to Growth: The 30-year Update", published in 2004. The 1973 sustainability classic, E. F. Schumacher's "Small Is Beautiful" spawned the Schumacher Society to help create sustainable local economies.

Although it has been thirty years since the issue of sustainability was clearly stated and understood, it took the more recent energy/climate crisis to make it front-page news. Optimists assume that we can have sustainability within a relatively unchanged and still growing technology; they believe that economics of capitalistic free markets will encourage and produce sustainability through new energy technologies and through

corporate choices. On a more thoughtful level, a program called The Natural Step (see below) encourages corporations to voluntarily develop a "deep" sustainability based on natural laws. A less optimistic view requires forcing changes in corporate behavior by regulation and taxes, or by altering economic demand, but still within the current structure. Economic pessimists feel that the corporate/capitalist system is broken and want to reduce corporate power or even completely change the global culture. Estimates of Earth's "carrying capacity" and the human "ecological footprint" (see below) imply that major changes are required if all humans are to live decently and all species are to live and evolve.

Now sustainability initiatives abound, including local activist groups, town and city governments, university offices of sustainability, and changes in business behavior. A World Institute for a Sustainable Humanity supports numerous projects around the world that foster sustainability, self-reliance, and reduction of poverty and environmental destruction. One AWISH effort, the Global Living Project on a farm in Vermont, offers "educational experiences that incorporate sustainability, voluntary simplicity, bioregionalism, organic agriculture, deep ecology, and earth-centered spirituality."

Myths of Sustained Yield and Multiple Use

The concept of sustainability has been around for a long time. Just over a hundred years ago, the "Father" of American forestry, Gifford Pinchot, expanded the "greatest good for the greatest number" concept of Bentham and Mill to "the greatest good for the greatest number in the long run", thus stating the primary guideline for sustainable forest management. The implications of this statement have been much debated, and I will not discuss it further except to point out that "the greatest number" is humans, of course, thus leaving all other species out of consideration.

As a forestry student in college in the 1950's I was introduced to the concept of "sustained yield". Professional foresters had preached since the 19th century that wood products could be removed from forests indefinitely as long as the forests were appropriately managed. Foresters were taught both how to determine the growth rate of forests and that harvest removal over time and area should not exceed this growth rate; this was the "sustained yield" value. Although fine in concept, the underlying assumption required that current or previous growth rates would continue indefinitely. There was no consideration of growth reduction by acid precipitation, by nutrient depletion from harvest removal and leaching, by insect or disease outbreaks, by fire, windstorm, or global warming, by invasive exotics, and by loss of diversity. This supposed sustained yield forestry also failed to account for economic changes that produced widespread sale of company lands and mills and consequent abandonment of sustained yield plans. Much the same results

have occurred with other renewable "natural resources" such as water, soil and agriculture, healthy air, fish, and game. In practice, sustained yield proves to be very elusive.

Part of the problem may be human conceit in thinking that we can reorganize nature for our own benefit. Samuel Hays in "Wars in the Woods", describes the long battle between "commodity forestry" and "ecological forestry". Commodity forestry develops agroforests with planting, fire suppression, pesticides, fertilization, and genetic selection. Agroforestry corporations jump on the sustainability bandwagon with commercials about sustainable timber harvesting, making it sound like a new idea, though it really is an old concept that has never been, and may never be, fully realized. Ecological forestry works with forests as natural systems, attempting not to remove more than nature can provide. But this too may be an unachievable human hope (see the Conservation Biology chapter).

Another useful concept from forestry is "multiple use". The U.S. Forest Service, my career employer, promotes the five primary uses of forest land as wood, water, wildlife, recreation, and range (or grazing). The multiple use concept argues that a forest of almost any size can provide all of these "products" simultaneously if the forest is just managed properly. The concept includes an anthropocentric expectation that an ecosystem can be all things to all people, which unfortunately just isn't true. So, in practice, furious battles continue over which use or product should dominate where: timber versus recreation, motorized vehicles versus hikers, log extraction versus watershed protection, clearcutting versus aesthetics, wildlife versus humans, oil versus sanctuaries, ski areas versus whomever, grazing versus everybody else, and mining trumps everything since 1872, except, of course, fire. The noisy political history of forest land use is unending, indicating that multiple use is a cornucopian pie in the sky. It's Hardin's Tragedy of the Commons; the one with the most political clout gets most of the supposedly communal ecosystem services.

Recognition that multiple use is not working has driven forest management recently toward what is effectively forest land zoning. Landowners post "No Trespassing" signs to keep out hunters, hikers, fishers, and ATVs. Large areas of public lands are established as "wilderness" where human activities are very restricted (except where mineral extraction trumps). Trails are specifically designated for foot-travel, for horses, for ATVs, or for snowmobiles. Municipal watersheds are designated as protected. States own and manage game lands. So many uses and users for too little undeveloped land - *it sounds like overpopulation to me*.

Definitions of Sustainability

"Sustainable growth" is an oxymoron. This term was hyped for a while, but seems to be less used now with spreading recognition that material growth cannot be sustained in a finite world.

"Sustainable development" has taken its place. Its meaning depends on how "development" is defined and we all know there is wide disagreement on that. The concept is a hopeful one, with the implication that it should be continually possible to improve the lot of the vast numbers of people who are not getting a fair share of Earth's riches. The methods for doing sustainable development are widely debated. Affluent Western culture believes that lending government money to build dams and highways and allowing corporations to build MacDonalds and sell Coca-Cola in poor countries fills the bill (see the Globalization chapter). Ecoshifters at the other extreme might see sustainable development in terms of providing support for small, local businesses and agriculture, and providing encouragement and means for limiting population growth.

"Smart growth" implies either that growth is a good thing as long as we do it smartly, or that it is inevitable so we need to do it smartly. Either way it contains an assumption that "we" (whoever is speaking) know how to do it right. *Given the forestry experience with "sustained yield" and "multiple use" I have serious doubts.* A more realistic assumption in an Ecoshift context is that we do **not** know how to do "growth" right any more than we know how to "manage" ecosystems (see the Conservation Biology chapter). For a good read that is somewhere between these extremes, see Eben Fodor's "Better, Not Bigger" on how communities have slowed and even stopped rampant development.

A "sustainable community" has been defined as a community that "meets the needs of the present without compromising the ability of future generations to meet their own needs". But this definition raises the question of who defines "needs", and invites "my present needs are greater (more) than your future needs".

A "steady-state economy" may have the right implications. It gets rid of "growth" and "development". In the context of a finite Earth it is not cornucopian but recognizes limits. A steady state is the only truly sustainable condition in the long run. This does not mean that the world's economic system would be completely unchanging. There is no true steady state in natural systems; they change gradually on average and greatly in certain places at certain times. Ecologists talk of a "shifting mosaic steady state". On a large spatial and temporal scale a system can be stable, but change can be frequent in any small part of the system. Local economies can grow and shrink while still maintaining a constant average.

Donald Mann, the founder and President of Negative Population Growth defines "sustainability" as "management of environmental and resource systems so that their ability to support future generations is not

diminished". *I like this because it doesn't say anything about present needs.* This definition requires a steady state and probably a much smaller human population. How far into the future is left undefined. Suffice it to say that very few people really consider "for millennia" when using the word "sustainability". Herman Daly may say more along the lines of this definition in "Beyond Growth" (note: he calls the term "sustainable development" "dangerously vague" although he uses it in his title).

Even Mann's reasonable definition is still anthropocentric; it is "management", "environmental", "resource", and "future [human] generations". Motivation to protect the Earth solely for the future of humanity can be called anthropocentric sustainability. Motivation to protect the Earth for the future of all creation and for the rights of the millions of other species to exist and evolve without human interference constitutes ecocentric sustainability. Each individual concerned with sustainability and each sustainable action lies somewhere on a continuum between these two extremes. Given that "sustainability" means different things to different people, let's plow on into some of the actions being carried out in its name.

Technofixes

New technologies and improvement in existing technologies cannot solve all our problems, but we need to keep working on them because we need all possible solutions. Time Magazine for November 12, 2007 covers "The Best Inventions of 2007". These include various futuristic vehicles including one that runs on compressed air, methane-fueled rockets, self-erasing paper for printing temporary documents, and bricks from fly ash. I am not going to dwell on such technofixes here. I will just note that the artificial biological systems for water treatment and purification developed over three decades by John and Nancy Jack Todd at Ocean Arks International are a fine example of what is needed. And I will pessimistically point out a few earlier technofixes that haven't turn out so well: weather modification, chlorinated hydrocarbon pesticides, antibiotics, nuclear power ("energy too cheap too meter"), elimination of paper by computers ("the paperless office"), and the "Green Revolution" (see the Food chapter).

Ceres, Certification, and Greenwash

The Ceres Coalition includes over 80 investor, environmental, and public interest organizations united to advance corporate responsibility. Ceres companies interact with all stakeholders, report publicly, and work to continuously improve their performance. The following "Ceres Principles" were developed in 1989 as an environmental code for companies to voluntarily adopt.

"Protection of the Biosphere - We will reduce and make continual progress toward eliminating the release of any substance that may cause environmental damage to the air, water, or the earth or its inhabitants. We will safeguard all habitats affected by our operations and will protect open spaces and wilderness, while preserving biodiversity.

Sustainable Use of Natural Resources - We will make sustainable use of renewable natural resources, such as water, soils and forests. We will conserve non-renewable natural resources through efficient use and careful planning.

Reduction and Disposal of Wastes - We will reduce and where possible eliminate waste through source reduction and recycling. All waste will be handled and disposed of through safe and responsible methods.

Energy Conservation - We will conserve energy and improve the energy efficiency of our internal operations and of the goods and services we sell. We will make every effort to use environmentally safe and sustainable energy sources.

Risk Reduction - We will strive to minimize the environmental, health and safety risks to our employees and the communities in which we operate through safe technologies, facilities and operating procedures, and by being prepared for emergencies.

Safe Products and Services - We will reduce and where possible eliminate the use, manufacture or sale of products and services that cause environmental damage or health or safety hazards. We will inform our customers of the environmental impacts of our products or services and try to correct unsafe use.

Environmental Restoration - We will promptly and responsibly correct conditions we have caused that endanger health, safety or the environment. To the extent feasible, we will redress injuries we have caused to persons or damage we have caused to the environment and will restore the environment.

Informing the Public - We will inform in a timely manner everyone who may be affected by conditions caused by our company that might endanger health, safety or the environment. We will regularly seek advice and counsel through dialogue with persons in communities near our facilities. We will not take any action against employees for reporting dangerous incidents or conditions to management or to appropriate authorities.

Management Commitment - We will implement these Principles and sustain a process that ensures that the Board of Directors and Chief Executive Officer are fully informed about pertinent environmental issues and are fully responsible for environmental policy. In selecting our Board of Directors, we will consider demonstrated environmental commitment as a factor.

Audits and Reports - We will conduct an annual self-evaluation of our progress in implementing these Principles. We will support the timely creation of generally accepted environmental audit procedures. We will annually complete the Ceres Report, which will be made available to the public. "

The list of Ceres companies as of June 2007 is pretty interesting: APS, Aspen Skiing Company, Aveda, Bank of America, Baxter International, Ben and Jerry's Homemade, Blue Wave Strategies LLC, The Body Shop International, Catholic Healthcare West, The Coca-Cola Company, Consolidated Edison, Dell Inc., Eileen Fisher, First Environment, Ford Motor Company, General Mills, General Motors, Green Mountain Coffee Roasters Inc., Green Mountain Energy Company, Green Mountain Power Corporation, Hardwood Products Company, Interface Inc., ITT Industries, Louisville & Jefferson County Metropolitan Sewer District, McDonald's Corporation, National Grid USA, Nike, Northeast Utilities, PG&E Corporation, Plan A, PPL Corporation, Seventh Generation, State Street, Sun Microsystems, Sunoco Inc, Timberland, Time Warner Inc., Vancouver City Savings Credit Union, Wainwright Bank & Trust Company, and YSI Incorporated. This list includes both global megacorporations and small, truly green companies. I have more to say in the next chapter on Socially-Responsible Investing.

Certification programs are another device to encourage voluntary sustainability efforts by businesses. Global Exchange certifies coffee, chocolate, and other products as "Fair Trade" when the grower or producer has been paid a fair price, may receive credit at fair interest, and may obtain technical assistance, such as converting to organic growing. "Fair trade" should not be confused with "free trade", which, as the goal of corporate globalization, means unrestricted trade with corporations setting the rules. In the wood and paper industry there are at least two major certifiers. The Forest Stewardship Council (FSC) has the best reputation among greens. It is relatively independent of industry, prohibits use of genetically-modified trees, avoids plantations, and monitors production from areas of high conservation value. The Sustainable Forest Initiative (SFI), on the other hand, is a certification program of the American Forest and Paper Association, which is clearly industry-controlled. This raises the question of who will police the police.

The forest industry in particular has a long history of unenforced regulations and lip-service to standards.

This further raises the question of "greenwash". Just because a product or company says it is green doesn't mean it really is! Many corporations are touting their products as green or eco-efficient or sustainable when they are not. For instance, paper can be labeled "recycled" when it uses only cutting scraps from the original manufacturing paper process. Look for the "post-consumer" percentage to see how much of the paper has actually been recycled by the hands of users. Watch out for commercials showing what great efforts a company is making; these efforts may only affect a tiny fraction of their multi-billion dollar business. Auto manufacturers tout their hybrid SUVs, which raise their gas mileage from a miserable 15 mpg to a still bad 20 mpg. "Green" tool and gift companies sell things that do little except contribute to our throw-away society. *Obviously I'm a real skeptic when it comes to corporations advertising their social responsibilities.*

The Natural Step

One thing corporations do understand is reducing expenses. Forward-looking companies are finding that energy conservation and internal recycling are less expensive and thus produce bigger profits than the usual burning of energy, consumption of natural materials, and dumping of waste. Both improving energy efficiency and alternative forms of energy have increasing benefits as oil prices rise. Avoiding pollution in the first place by internal reuse of toxic materials is cheaper than cleaning pollutants from waste. Companies like Interface and Hewlett-Packard take back used components and remanufacture them into the same product; this is true recycling. Some of this activity is produced by European laws, particularly in Germany, that require such processing. Global corporations who want to sell in Europe need to accommodate to such laws, even if the product is actually made in China.

Way back, shortly after the first Earth Day, Barry Commoner, in "The Closing Circle", defined four laws of ecology:

1. The First Law of Ecology: Everything is connected to everything else.
2. The Second Law of Ecology: Everything must go somewhere.
3. The Third Law of Ecology: Nature knows best.
4. The Fourth Law of Ecology: There is no such thing as a free lunch.

A well-known restatement of the Second Law is "there is no 'away' ". We are all familiar with the NIMBY syndrome "not in **my** back yard". But dumping in somebody's back yard continues, usually over their loud objections. The latest mega-NIMBY is the U.S. government decision to dump nuclear wastes in Nevada over the objection of its governor and

people. The Fourth Law states that with respect to Earth you can't get something for nothing.

Swedish M.D. Karl-Henrik Robert has effectively restated Commoner's laws in four principles called The Natural Step with the goal of encouraging businesses to change their practices. The Natural Step is being adopted by enlightened corporations; see "The Natural Step for Business" by Nattrass and Altomore. Here are the four basic principles:

1. Substances from the Earth's crust can not systematically increase in the biosphere.
2. Substances produced by society can not systematically increase in the biosphere.
3. The physical basis for the productivity and diversity of nature must not be systematically deteriorated.
4. In order to meet the previous three system conditions, there must be a fair and efficient use of resources to meet human needs.

The first principle says that we can't keep mining stuff from below Earth's surface and moving it into living organisms and the atmosphere. This refers to such things as carbon, sulfur, and toxic metals. The second principle says we can't keep introducing new materials to Earth's system, materials like DDT, CFCs, and PVC. The third principle says we have to stop destroying ecosystems like productive soils, forests, fisheries, and grazing land, not only for humans but for all of life. The fourth principle says that we cannot meet the first three if we continue to have gross inequalities in allocation to different sectors of human society. These principles are often called requirements, because they are absolutes in the long run. Humanity **must** meet these requirements or we cannot survive as a world society. Because the absoluteness of at least the first three can be demonstrated logically, even to corporate executives, The Natural Step has had considerable impact in changing corporate behavior.

Regulation and Taxes

Because voluntary restrictions have been nowhere near enough to rein in corporate behavior, various regulations have been proposed and enacted. The least restrictive of these are effectively purchasing a "right to pollute".

Tradable emission allowances allow corporations to buy and sell rights to emit specified amounts of pollutants (see the Energy chapter). The federal government allocates an emission allowance to each company each year. If the company does not need all its allowance because it built or cleaned up a plant, it can sell what it doesn't need to a company that would otherwise exceed its allowance. The second company in effect buys a right to continue polluting. Or, a green organization can buy allowances and "retire" them, thus reducing the total amount of pollution. A company

gets incentive to clean up its act because it can then sell its unused allowances. The government then gradually reduces the total allowances. In the U.S. Clean Air Act of 1990 this system replaced strict emission limits for SO_2, which suffered from inadequate monitoring and enforcement by the individual states. This cap and trade system has actually worked to reduce sulfur emission. For greenhouse gases, especially CO_2, Europe has a mandatory system in place, but the U.S. does not (yet).

On a different scale, but the same in principle, is "pay by the bag" trash disposal. This is buying a right to dump a certain volume of waste. There is incentive to reduce the amount of waste if the price is high enough. On the other hand, the wealthy still can afford to dump all they want, just as they will be least affected by rising oil prices. Many "transfer stations" (formerly dumps) charge additional fees for various kinds of problem waste. Paying for dumping rights is a form of taxation.

In his classic book "The Ecology of Commerce" Paul Hawken takes the tax concept much farther by proposing taxes on all kinds of environmental impacts. He proposes replacement taxes on durable goods, taxes on mineral consumption, taxes on farmland destruction ("development") and so on. In principle we should tax consumption, not income. This clearly would require great changes in our current taxation system, but beginnings are already in place such as the puny carbon tax on fossil fuel consumption.

Another step on the way to taxing adverse impacts would be to eliminate government subsidies for such things as transportation, logging/grazing, agriculture, mining, and industrial development. In each of these areas the general taxpayer contributes funds that directly and adversely affect Earth's systems.

My high school classmate Robert Repetto, formerly of World Resources Institute, says "If we can enact policies that adjust prices so that they more accurately reflect all the costs associated with producing a particular pollutant or using a particular resource then society will make better decisions." But this requires economic valuation of such things as human health and even life and of other species' health and even existence. How much should Monsanto pay for each life lost at Bhopal? Would we have wiped out a species (Pacific yew) in order to save some human lives from cancer using the drug Taxol? (The question is moot now that taxol is synthesized.) How do we determine costs of aesthetics, loss of species, and ecosystem degradation? We cannot do future discounting for irreversible processes, even though such discounting is standard economics now. A variety of methods have been proposed to evaluate and include "true costs". Geoffrey Heal's "Nature and the Market Place" and David Korten's "The Post-Corporate World" may have more on this. *Much of the rest of ECOSHIFT describes why I do not believe that a purely economic approach can solve the problems of human impact on Earth. Changing economics is necessary but not sufficient.*

Social activists seem to divide into two camps regarding how to fix problems such as adverse impacts on Earth and inequities between rich and poor. Some believe that the world economic system just needs to be fixed, as by overthrowing a dictator in Iraq, redistributing food to famine areas, or tinkering with taxes and regulation. Others feel it is the capitalist system itself that creates problems and that it should be overthrown, or decentralized by giving "power to the people". Winona LaDuke says:

> "We must ... charge ourselves with curbing the rights of corporations and special interests, transforming the legal institutions of the United States back toward the preservation of the commons, and preserving everyone's rights, not just those of the economically privileged." ["The Seventh Generation: Rethinking the Constitution", Wild Earth, Winter 1999/2000, p. 21-23].

In 1886 the U.S. Supreme Court equated corporations with people and gave them the same rights. Over more than a century this has almost eliminated government restraints on corporations in the name of the freedoms of the Bill of Rights. For more discussion of this see the Wikipedia entry on Corporate Personhood Debate. A corporation exists because of a charter granted by state government. Yet in the early 19th century withdrawal of a corporate charter was ruled by the U.S. Supreme Court to be a violation of individual rights under the Constitution, so this avenue has not been used even in severe cases of corporate air and water pollution or of massive corporate fraud. In the last few years court cases about Owens-Corning and asbestos and about Nike lying about its use of sweatshops have kept the issue alive (see Wikipedia article above). Reclaim Democracy works to "End Corporate Rule!". Working to change laws, and even the structure of law is a top-down approach that requires a great deal of political clout. An alternative way works from the bottom up, by changing the demand for corporate products.

Reducing Demand

Altering what we as individuals buy from corporations has been partially discussed already in the chapters on Energy, Food, and Housing. In this section I discuss purchasing in general and some guides for doing it in a green, sustainable way. The major point here is that each of us exercises considerable power by virtue of how and where we spend our money. Every corporation in the world must sell its products or it will not survive. But who are the ultimate buyers of these products? We are. Each of us as individuals make dozens of decisions every day about how we will spend our money and therefore which corporations we want to stay in business. No small group of individuals controls this, only the massive

accumulated buying power of millions of people. Corporations can be brought down by refusal of people to buy their products. We as individuals have the power to create change; we just need to learn how to use that power.

Co-op America is perhaps the leading organization devoted to the principle of changing human demand. Its various publications encourage a wide variety of ways to reduce impact on Earth, to encourage social justice, and to change corporate behavior. Its Green Pages list thousands of green products. *My one complaint about Co-op America is the amount of paper they send me asking for support of its various campaigns.*

The Center for a New American Dream tries to reduce and shift North American consumption while fostering opportunities for people to lead more secure and fulfilling lives. It helps individuals, communities, and businesses establish sustainable practices that will ensure a healthy planet for future generations. Their buying guide has comments and links to sources for a large number of product categories; this is a very rich source of buying information. Development of local green buying lists is a project of New American Dream. Near me, Global Awareness, Local Action of Wolfeboro NH was one of the first five places to take on this project of surveying local stores in different categories about their principles and practices. Their final result is a "Resource Guide for Buying Wisely in Wolfeboro".

The Council on Economic Priorities published an annual "Shopping for a Better World" from 1988 to 2000. This guide rated corporations for working conditions, environmental impacts, and military involvement. CEP played a major role in getting businesses to improve their practices, but apparently is now inactive. However the web site Shopping for a Better World promises a 2009 revision.

One more book and three more web sites will have to represent the hundreds of information sources available about making sustainable choices. "The Consumer's Guide to Effective Environmental Choices" by Brower and Leon discusses what actions are really effective and what are not. The Business Alliance for Local Living Economies is a large organization for local businesses wanting to become more sustainable. It began as a Philadelphia restaurant seeking to use only locally-produced or fair trade food, and now includes over 50 local business networks. BALLE works to unite locally-owned businesses into "a Living Economy [that] ensures that economic power resides locally, sustaining healthy community life and natural life as well as long-term economic viability." Shop for America lists products that are made in the United States. The Low Impact Living web site is one of a growing number of sites on how to reduce your personal impact.

Duane Elgin has said, "The character of a society is the cumulative result of countless small actions, day in and day out, of millions of people." *As a reminder that the purchasing choices you make every day do make a difference, I've developed a "refrigerator reminder" poster called "Voting*

For the Future of the Earth". You can download it as a printable PDF file from http://www.ecoshift.net. This poster encourages you to be joyful in your spending decisions, to feel powerful, and to be rewarded.

VOTING

FOR THE FUTURE OF THE EARTH

YOU VOTE by how you transport yourself and how much you travel.

YOU VOTE by what products you buy, how long you use them, and how you get rid of them.

YOU VOTE by what you eat and drink and where it came from.

YOU VOTE by how much water you use and how warm you keep your house.

YOU VOTE by how many children you have and how many grandchildren you hope for.

YOU VOTE by how much you give to which social action groups and what you say to politicians.

YOU VOTE by what you choose to do for entertainment.

YOU VOTE by your choice of housing and of the wildness of your land.

YOU HAVE MANY VOTES.

PLEASE USE THEM WELL.

Carrying Capacity and Ecological Footprint

> "Humans are part of nature, too. We have always diverted part of the earth's great cycles for our purposes and we always will. What is required of us is not to go away or do nothing, but to take a reasonable, sustainable amount, doing as little collateral damage as possible and returning our wastes in a way that nature can handle. To do that, we need to use our science, our heads, and our sense of justice to avoid stealing nature's bounty from each other and from the future." - Donella H. Meadows [Timeline, March/April 1995, p. 9].

What then is a reasonable sustainable amount? Can we have normal, healthy ecosystems on Earth as well as a sizable human population? How much can we take from natural systems and Earth without impinging on future generations of humans and other life-forms?

The question "What is the carrying capacity of Earth?" dates back to the time of Malthus. The answer almost always consists of an estimate of how large a human population the Earth can feed. But this anthropocentric concept gives little consideration to the quality of human life and none at all to the existence of other species. William R. Catton Jr. ["What Have We Done to Carrying Capacity?". Wild Earth, Winter 1997/98, p.64-70] gives two definitions:

1. "carrying capacity is the maximum population of a given species that a particular environment can support indefinitely (i.e. without habitat damage)" and
2. "carrying capacity is the maximum human population equipped with a given assortment of technology and a given pattern of organization that a particular environment can support indefinitely"

The first definition is a generic definition that applies to each and every species of life. Each species is hardwired by evolution to try to maximize its numbers, but is limited by external or environmental factors like competition, climate, and pestilence. As far as we know, *Homo sapiens* is the first species in which some individuals debate the question of whether maximizing its numbers is a good thing or a bad thing and in which the question gets restated according to the second definition. The anthropocentric second definition appears to allow increasing capacity by technological fixes and "better" government. That interpretation seems contradictory to the Ehrlich and Holdren equation, Impact = Population x Affluence x Technology, which states that population must go down as affluence and technology go up in order to keep adverse impact from

increasing. We are in the midst of testing the contradiction as countries such as India and China try to raise their living standards to Western levels.

In 1996 "Our Ecological Footprint" by Mathis Wackernagel and William Rees quantified the area of Earth's land surface required to support a single human at a given level of lifestyle. Their approach and methods for ecological footprint analysis have become widely used. Calculations show that an average American requires between 12 and 24 acres of land surface to provide all the energy and materials consumed and to absorb the wastes discharged by that individual. This area can be divided into roughly equal fourths for food, housing, transportation, and consumer goods. But there are only 5 productive acres per person actually available on Earth. The bottom line, which is now generally agreed upon, is that **between three and six Earths** would be required to sustainably support all humans at the current consumer level of the average American. Earth is way overpopulated by humans unless most of us live with what you and I would consider an unacceptably poor quality of life.

Clearly achieving the "American Dream" is impossible for most people on Earth.

Ecological footprint analysis will always be an approximation, with differences in methods giving the range of values above; but both data and methods are improving continually. The land areas required for transportation, housing, industry, and production of food, wood, and paper for each individual can be calculated relatively easily. The relation of energy consumption to land area is more complicated and controversial. Ecological footprint analysis assumes that truly sustainable energy can only be produced by photosynthesis in natural systems. As described in the Energy chapter, natural ecosystems convert impinging solar energy into chemical or biomass energy with an efficiency of 1-2%. Thus productivity of vegetation provides values for energy footprints.

Methods and data used for ecological footprint analysis continue to improve. Changes suggested by Jason Venetoulis and John Talberth in "Refining the Ecological Footprint" [http://www.rprogress.org/publications/2006/RefiningEF_2006.pdf] have been incorporated into a personal footprint questionnaire at Redefining Progress. *In spite of all my endeavors I still get 4.9 Earths needed for all Earth's humans to live my lifestyle. This shows the triviality of most American efforts to reduce consumption and footprint, and the necessity for significant reduction of human population to allow a satisfactory life for everyone.* Further discussion of ecological footprinting and a very simple footprint calculator can be found at Best Foot Forward.

Although not specifically footprint analysis, "Earth Score", by Donald Lotter provides another questionnaire to monitor your personal impact on Earth. It assigns both negative Impact points and positive Action points for your activities, with appropriate weightings. I like this because it compares, for instance, the impact of your level of recycling with your level

of having children, and shows where you can improve your practices. A similar questionnaire available on the web is the "Living More Lightly Profile" in Chapter 5 of the book at the Institute for Earth Education.

The personal footprint analysis at Redefining Progress posesin its "Comments" section the questions "What about population?" and "What about other species?". Response to the first shows that one-child families successfully reduce population. The second question allows a percentage of the planet for other species; I choose 50%. *My ecocentric ethos says that we humans should use only half the land surface of Earth for our own sustenance, and should leave the other half truly wild so that other species can live their lives and evolve without human interference (see the end of the Conservation Biology chapter). And I'm not talking just about the desert and tundra areas where humans don't want to live, but about half the ecosystem productivity, half of each ecosystem, perhaps half of each country, state, and even township.*

Socially Responsible Investing: Changing Corporate Behavior

> "On the meeting ground between your values and those of your neighbors is a core place of human decency that has been sorely lacking in our financial systems. Given the choice, we know that very few of us will choose greed and destruction of community or the environment. Rather, most of us will be excited to find ways to direct our savings to nurture life and be a part of whatever social values we hold dear. As a new century dawns, we have the opportunity to enter a new era of economic responsibility." – Hal Brill, Jack A. Brill, and Cliff Feigenbaum ["Investing With Your Values" p. 22]

The 2008 crumbling of financial institutions and stock markets occurred after this chapter was written. Very possibly this upheaval and government responses to it represent the early stages of crumbling of the whole fossil fuel supported capitalist house of cards described in the Where We Are Now chapter. The world's economic system apparently cannot be understood or predicted by anyone, and no one really seems to know what to do now to fix it. Pessimists will choose (and have chosen already) to convert stocks and bonds to cash. Optimists hope that by staying the course the system will recover. This chapter assumes a green optimist viewpoint and is essentially unchanged since late 2007.

If you try to avoid the curses of capitalism or if you simply do not have capital to invest you can skip this chapter.

Otherwise you can do a great deal both for Earth and for your own satisfaction by choosing how to save and invest your money rather than how to spend it. Americans on average now save only 1% of annual personal income (it was 8% prior to 1995) and are in debt at least up to their eyeballs. Yet the total amount of individual investment in stocks, bonds, and "cash" instruments remains huge (even at the end of 2008). About 50% of Americans own corporate stocks or stock mutual funds. This chapter is not a primer on saving or investing, but assumes basic investment knowledge about individual investing and saving for

retirement. Ecoshifters should probably start with Dominguez and Robin's "Your Money or Your Life".

In 1988 Susan Meeker-Lowry wrote one of the earliest books on socially responsible investing (SRI), "Economics As If the Earth Really Mattered". If you have any money invested in stocks, bonds, banks, mutual funds, etc. and you care about how your money is being used, I recommend the latest edition of "Investing With Your Values" by Brill, Brill, and Feigenbaum. One chapter reviews individual socially-responsible mutual funds. Other chapters describe the four levels of SRI: avoidance screening, affirmative screening, community investing, and shareholder activism.

Screening

In 1928 the Pioneer Fund was formed in response to desires of some religious Christians to avoid investing in corporations that promoted the "sins" of alcohol, tobacco, firearms, and gambling. It was the first "socially-screened" mutual fund and the beginning of SRI. The environmental movement of the early 1970's publicized pollution of air, land, and water by major corporations and questioned the propriety of investing in such corporations. The Pax World Fund, founded in 1971, added environmental pollution, military weapons, and nuclear power to the sin screens. By the early 1980's there were a number of such socially-responsible mutual funds. More recently screens involving the quality of the workplace, wage levels, product safety, community involvement, and corporate governance have been added. At times, some funds avoided companies doing business in specified countries, such as South Africa and Myanmar. Other negative screens include inhumane treatment of animals, child labor and sweatshops, unsafe and toxic products, and discrimination against women and minorities.

Through the 80's and 90's SRI growth was inhibited by widespread perception that such investments produced lower returns than investments that focused only on the bottom line of shareholder profit. But by the turn of the century, this attitude had been stood on its head as both private investors and the financial world discovered that socially-responsible corporations were also very profitable corporations, and that SRI funds returned as much or more than non-SRI funds. Companies that limit their pollutants, recycle materials, reduce their energy consumption, and treat their employees and communities fairly make better profits in the long run. Currently there are 66 funds on the Green Money Journal's list of screened stock, bond, and balanced mutual funds.

Positive screens developed in an effort to reward good behavior as opposed to penalizing bad behavior. Negative screens can often be quantified, such as avoiding companies that do more than 5% of their business with the U.S. Department of Defense, or make more than 3% of their profit from selling tobacco. But positive screens tend to be more

qualitative and thus more difficult to evaluate. Positive screens involve such things as:

- type of goods and services (do they improve the quality of life?),
- support of employees and health of the workplace (is health insurance coverage good? is childcare provided? are OSHA regulations complied with?),
- status of minorities, indigenous peoples, and women (are they treated fairly? are they fairly promoted and represented in management and on the board?),
- environmental practices (are they sufficiently clean? do they fix prior problems? do they produce toxic products or waste?),
- corporate disclosure (do they provide verifiable public information about their environmental and social actions?), and
- community relations (do they override local legal obstacles? how much do they donate to local charities?).

Although many SRI funds and fund families do their own in-house screening, others use company lists produced by the Domini and Calvert fund groups, each of which has its own internal screening criteria. The November 2007 Calvert Funds list included 647 companies out of the top 1000 companies traded on American exchanges, *so the requirements do not seem particularly difficult to meet.* At the same time, the top ten holdings in the Domini 400 Social Index were Microsoft, AT&T, Procter & Gamble, Cisco Systems, Johnson & Johnson, Apple, JPMorgan Chase, Intel, Coca-Cola, and Verizon. Other megacorporations often found on SRI lists include PepsiCo, MacDonalds, and, in the past, even Wal-Mart. *If you do not want to support these corporate behemoths, you need to be selective about what SRI funds you choose.* SRI mutual funds have been criticized (for instance by Paul Hawken) because they have no standards. Any fund can call itself socially-responsible. So it is important for a potential investor to look at both the list of principles and the list of holdings in any SRI mutual fund.

SRI index funds are designed to closely hold and follow stocks in one of the SRI screening lists. Index funds have been quite popular recently, partly because they usually have low fees, and partly because on average they out-perform managed funds. But the former SRI index funds run by Domini and Citizen's have given up the ghost in the past two years, apparently because there is little profit in relatively small index funds. Vanguard's Social Index Fund, on the other hand, has the advantage of backing by one of the largest mutual fund groups; it uses the FTSE4Good(US) Select Index. *Personally I think that index funds invest in too large a range of behaviors. I rather choose specific funds with stricter principles and a narrower corporate selection.*

For more on SRI and information on individual funds, consult the Social Investment Forum. It lists SRI Mutual Funds with their performance and social screens. The Green Money Journal, which comes as part of a Co-op America membership, contains interesting articles as well as a fund list.

I certainly do not want to get into recommending individual funds here, but I cannot avoid mentioning two funds that are interesting because they are different. The New Alternatives Fund has been around for some years, but had not done very well because it has always been about alternative energy. Its prospectus states "Alternative energy means production and conservation of energy by means which reduce pollution and harm to the environment, particularly when compared to conventional coal, oil or atomic energy." Now, with the mainstreaming of the global warming issue, the geothermal, hydro, wind, and solar power holdings of New Alternatives are in great demand. The other fund, Portfolio21, was founded in 1999 to invest only in companies that attempt to follow sustainability principles as exemplified by The Natural Step (see the Sustainability chapter).

Changes in screening criteria are in the works for many funds. The U.S. Securities and Exchange Commission requires that each mutual fund must express its "fundamental policies" in its prospectus, and further, that fundamental policies can only be defined and altered by majority vote of the shareholders. Many SRI funds had included their screening criteria in their fundamental policies. In the past several years the SRI industry has argued that the negativity of "socially-responsible investing" has become counter-productive, and that the positive term "sustainable investing" should replace it. As part of this change, funds are replacing strict principles with more loosely specified but broader ones. For example, Pax World Funds changed its weapons exclusion from companies on the "Department of Defense list of 100 largest contractors ... if 5% or more of gross sales ... are derived from [such contracts]" to companies "significantly involved in the manufacture of weapons". They also changed "companies that derive revenue from the manufacture of .... gambling products" to companies "involved in gambling as a main line of business". To be fair, Pax did add mentions of "protecting the environment, advancing equality, and fostering sustainable development", "corporate responsibility", and "unethical business practices" to its fundamental principles. Fixed "thou shalt not" principles are being replaced by flexible "thou shalt" principles, but Board interpretation of these is expressed in Board-controlled "non-fundamental principles". *I admit to a negativity about what I have perceived as softening, and I voted against the Pax changes, but the new principles do cover a much wider range of corporate behavior.*

Will the term SRI be replaced by "sustainable investing"? *I hope not, because I think the former is more aggressive and the latter more passive and softer.* For more on this transition, see the article by Joe Keefe on the

Pax web site. He points out that SRI is an "alternative" investment strategy using negative screening criteria, whereas sustainable investing using positive social, environmental, and governance criteria is a "transforming" strategy. He adds, "sustainable investing, by contrast, is explicitly progressive: it holds that the best companies (and the best investments) are those that act in the public interest; that serve all their stakeholders, not just shareholders; that do not externalize their costs onto society; and that pursue wealth creation strategies focused on the long term." *Still, I'm reluctant to change my chapter title here because a change to "sustainable investing" seems like the same kind of moderation that happened earlier to zero population growth, to radical environmentalism, to organic foods, and to the Democratic Party. The early radicalism that I believe is needed to create change wears off and gets watered down in an attempt to appeal to a broader spectrum of people.*

Shareholder Activism

SRI funds, non-profit and religious groups, and motivated individuals have all used their shareholder power to try to change corporate behavior. This is called shareholder activism. Its most visible form is the submission by a shareholder to a corporate annual meeting of a resolution to be voted on by all shareholders. Such proposals vary widely, including ceasing to do business with repressive governments, limiting financial benefits to high level officers, disclosing environmental activities and problems, and providing child-care and health insurance to employees. Although shareholder resolutions usually gain only a small percentage of the vote, a resolution can be submitted year after year and may ultimately wear down the corporate board enough that they do something about the problem. Some shareholder resolutions gain substantial publicity, which puts pressure on the Board to respond.

A second form of activism, available to organizations and SRI funds, but probably not to individuals, involves negotiation with a corporate board or officers. When a huge endowment fund, such as Harvard University, threatens to sell its holdings in XYZ Corp. because XYZ uses sweatshops in Myanmar, the corporation sits up and takes notice. Because state and business pension plans have so many dollars behind them, companies must listen to their requests for changes in corporate behavior. In spite of negativity from Paul Hawken and others, the SRI mutual fund industry has influenced divestiture from South Africa and Myanmar, adoption of pollution limitations, corporate disclosure of various activities, and adoption of the Ceres Principles (see the Sustainability chapter). Prospectuses of SRI funds increasingly describe their activism as shareholders of the companies they hold.Twenty of the 36 resolutions filed by the Calvert Funds in 2007 were withdrawn after the companies agreed to make changes.

Community Investing

The third leg of the SRI stool is community investing, which involves lending money to develop local businesses, to preserve historic buildings, or to start microbusinesses at both local and international levels. Banks that support community investing may provide low interest loans for inexpensive housing, for building renovation, and for start-up businesses, often by minorities or women. In the United States, Shore Bank of Chicago, America's fist community development bank, has been a national leader in community investing. It provides checking, savings, CDs and IRAs to individual on-line investors. Other banks, like Chittenden Bank, offer socially-responsible accounts, which use investor funds for socially valuable mortgages and other loans. On the international level the Grameen Bank in India has garnered world-wide fame and a Nobel Peace Prize for initiating the concept of micro-credit for the poor, in which a loan of only a couple of hundred dollars allows someone to start up a new business. The default rate on such loans has been negligible.

In my state, the mission of the New Hampshire Community Loan Fund reads "to serve as a catalyst, leveraging financial, human and civic resources to enable traditionally underserved people to participate more fully in New Hampshire's economy. We do this by:

- providing loans, capital and technical assistance;
- complementing and extending the reach of conventional lenders and public institutions; and
- bringing people and institutions together to solve problems."

Projects of NHCLF include affordable housing, community facilities, and micro-credit. This is just one example of alternatives to normal investments that provide social good. The author of "Radical Simplicity", Jim Merkel, makes all his investments as first mortgage loans to homesteaders, who are trying to live close to Earth and with a small footprint on it. In a small way, this exemplifies "social venture capital" in which risk-taking investors support startup companies with green and justice objectives.

In conclusion, whether you own mutual funds, stocks, bonds, or even just a bank account, you may be concerned about how your money is being used. Green and socially-responsible investing employs your money to support corporations, organizations, and communities that are working on sustainability and other ecological and ecojustice issues.

Bioregionalism: Developing a Sense of Place

"A growing number of people are recognizing that in order to secure the clean air, water and food that we need to healthfully survive, we have to become guardians of the places where we live. People sense the loss in not knowing our neighbors and natural surroundings, and are discovering that the best way to take care of ourselves and to get to know our neighbors, is to protect and restore our region. Bioregionalism recognizes, nurtures, sustains and celebrates our local connections with:

- Land
- Plants and Animals
- Water: Springs, Rivers, Lakes, Groundwater, and Oceans
- Air
- Community: Native Traditions, Indigenous Systems of Production and Trade"

– from the Bioregional Congress web site

I can't remember if the average American moves once every three years or once every seven years, but it really doesn't matter. The point is that North Americans are a mobile society, with freedom to live on the Atlantic coast or the Pacific coast or anywhere in the hills, mountains, prairies, and deserts in between. The massive westward migrations of the 19th century have morphed into migrations from farms to cities, from job-poor to job-rich locations, and from urbanized areas to more distant suburbs. National corporations and the federal government (especially the military) "transfer" families hundreds or thousands of miles. In addition, both before and after retirement, people are subject to the feeling that "the grass is always greener on the other side of the street". Many of my own friends, who are becoming older, choose to move to wherever one or more

of their children happen to be, and their children seem to spread to all parts of the country. This frequent "uprooting" means that people do not know or care much about where they are currently living.

The introductory social question "Where do you live?" always elicits a response of "in North Conway", or "in New Hampshire", or "in the United States" depending on the location of the conversation. But these are merely anthropocentric political designations completely unrelated to the natural world and to the Earth systems that support our lives. "In the Upper Saco Watershed" or "in the Gulf of Maine Bioregion" constitute ecocentric responses to the same question. Why do we all define our home by artificial political boundaries, rather than by natural boundaries? If we are going to learn to live more lightly on the Earth, perhaps we need to redefine where we live in Earth-based terms.

The concept of bioregionalism says that we must **know** a place in order to treat it with respect, that we must understand a place in order to protect it instead of destroying it. Similarly we must know the geology, plants, and animals of a local ecosystem in order to maintain its structure and function, and we must know its human history in order to respect its artifacts and the peoples involved in it.

Losing and Finding a Sense of Place

In the past, indigenous peoples, whether hunter-gatherers or agriculturists, depended almost completely on their local surroundings for both survival and pleasure. They possessed a deep understanding of their environment, of its soil, water, wildlife, and plants. Place names were abundant and allowed memorization of mental maps. Stories were used to pass on knowledge of place. Reverence and awe were paid to the gods or spirits of natural processes, on which the people depended. "Resources" were whatever they could find in their limited geographic area.

Over time, many such tribal cultures developed into city states, which later combined into countries. Cities became possible as agriculture developed and a decreasing percentage of the population was needed to produce food. The separation of humanity from the natural world parallels urbanization now, just as it has for 10,000 years. David Korten, in "The Great Turning" shows that with urbanization and development of empires people no longer needed to know where their food, their water, and materials for clothing, shelter, and pleasure came from. The development of trade (commerce) led gradually to a loss of sense of place. Today, the disconnect of much of humanity from the basic sources of its necessities and frills connects directly with the destruction of Earth by commerce.

Loss of a sense of place also means loss of local community. In suburban New England, where I have spent most of my life, the concept of "neighborhood" is meaningless. Living next door to someone is no guarantee that you will ever go into their house or even know who they are. Automobiles and cheap fossil fuel have destroyed the need for

neighbors. Our friends can live in other parts of town or even several towns away. Our needs are met by buying stuff in stores rather than borrowing from neighbors. In "Deep Economy" Bill McKibben makes a case that a sense of place was lost with the loss of local radio and newspapers and the development of national television. Restoring a sense of place not only is a prime goal of bioregionalism, but also extends into local production of food (see the Food chapter), supporting local businesses (see the Globalization chapter), and re-establishment of a sense of community (see the Ecojustice chapter).

Regaining a sense of place requires on overt effort on the part of individuals. It is a learning experience. It involves reading abut local history, learning about local geology, walking in woods and fields, on beaches and mountains, and studying local natural history. I have always been impressed by the walking that Europeans do and their interest in mushrooms and birds. Europeans appear much more place-centered than Americans, aided by the networks of footpaths that connect developments and villages. They do not spend all their time either indoors or in an automobile as many Americans do. Scott Russell, in "Staying Put", describes the values of learning to be "firmly grounded in household and community, in knowledge of place, in awareness of nature, and in contact with that source from which all things arise."

Senses of community and home are prerequisites for action to prevent development and pollution. Jim Schwab, in "Deeper Shades of Green" shows that "home" implies fighting to prevent being dumped on, fighting even by those with no apparent power. Bioregionalism in the urban environment sees "abandoned" lots as wild places, seeks to reopen and renaturalize buried streams, and wonders at city-dwelling charismatic megafauna like peregrine falcons. Paul Hawken's "Blessed Unrest" documents hundreds of local organizations formed to deal with specific local, often urban, problems. These organizations are always run by individuals with a strong concept of "home" and usually a strong desire to protect something more natural from something more artificial. Grassroots environmental activism is founded on a strong sense of place.

The Bioregion Concept

Bioregionalism considers how our lives as individuals and communities connect to the natural system that surrounds us, including what we obtain from it and what we do to it. The boundaries of a bioregion can be defined in various ways, but generally utilize the concepts of watersheds, types of plant cover (ecosystems), and homogeneity of human populations (regional culture).

Bioregionalism involves a continuous learning process and a wide range of subjects. Here are some of the questions that bioregionalism asks:

- What are the boundaries of your local watershed? Where does the stream draining it go?
- What are the local landforms and their geologic history?
- Where does your water supply come from? Where does your sewage go?
- What happens to your garbage, trash, and recycling?
- Where does your food come from? (**not** "the supermarket"!)
- What are the local soils like and how did they form?
- What are common weather patterns? What creates the local climate?
- What is the local history of native humans?
- How many different ways has modern history altered the landscape?
- How is the health of local water bodies?
- What kinds of wildlife are present, large and small?
- What common plants dominate the landscape, from vernal herbs to trees?
- What local species are endangered, invasive, or edible?

Answering such questions involves a combination of studying and exploring. Studying requires repeatedly using books about local and regional history, including native peoples, a shelf full of field guides and nature books, collections of maps of various kinds, annual town reports, and local and regional web sites. Exploring requires getting outdoors with such things as snowshoes or hiking boots, field guides, binoculars, maybe camping gear, and, ideally, a trail out the back door. Developing a sense of place or connection to locality is endlessly fascinating and stimulates a "sense of wonder", of awe of one's surroundings, one's environment. It's fun, and it costs practically nothing.

Peter Berg created the Planet Drum foundation to develop:

> "the concept of a bioregion: a distinct area with coherent and interconnected plant and animal communities, and natural systems, often defined by a watershed. A bioregion is a whole 'life-place' with unique requirements for human inhabitation so that it will not be disrupted and injured.... Planet Drum helps start new bioregional groups and encourages local organizations and individuals to find ways to live within the natural confines of bioregions."

The Foundation for Global Community produced a 28-minute video "A Sense of Place: What is the appropriate relationship between humans and the whole living system?", which is now distributed by Hooked On Nature. The Wildlands Project supports discussion and action in bioregionalism and conservation biology. It formerly published "Wild

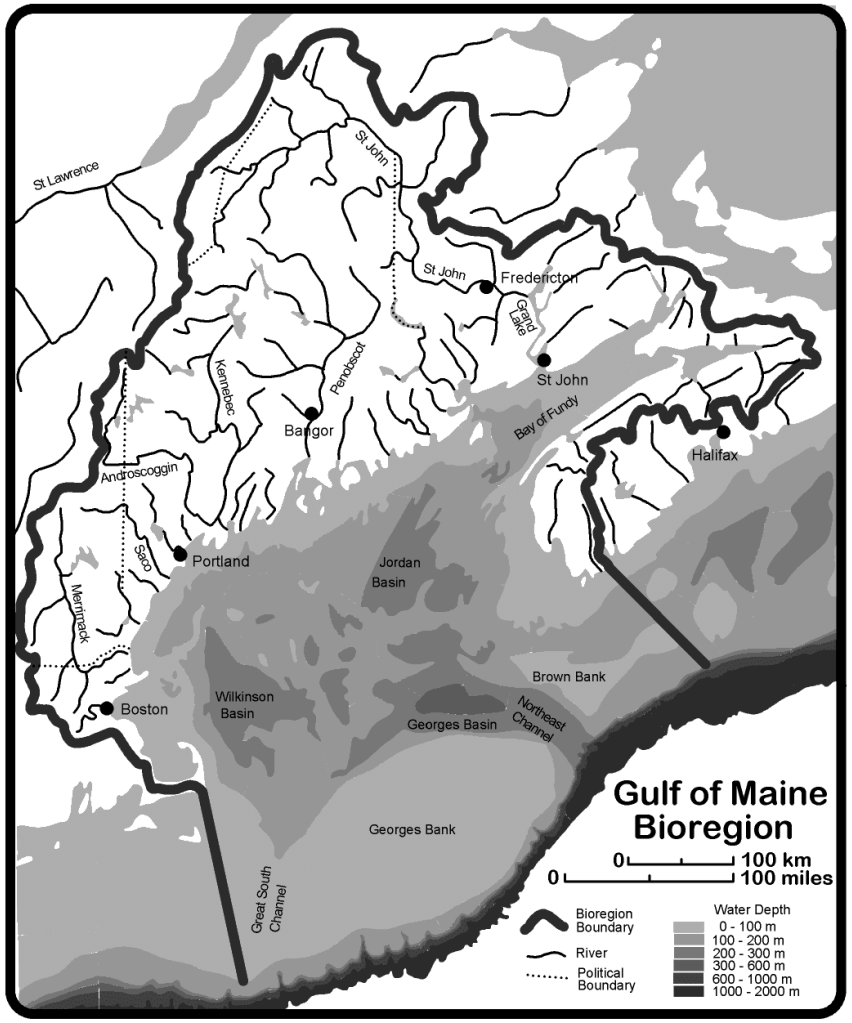
Earth" magazine, which contained many excellent articles on bioregionalism, conservation biology, deep ecology, and population.

The Gulf of Maine Bioregion

Bioregionalism does not rigidly define bioregion boundaries, but lets the context of the discussion determine what kind of boundaries are used. This section uses my own bioregion as an example. The Nature Conservancy has developed a bioregion map for the United States that emphasizes terrestrial ecosystems. In that scheme, New England is part of three bioregions. The Northern Appalachian/Boreal Forest, often called "The Northern Forest", is dominated by spruce-fir and northern hardwood forests on glacial till soils on flat to mountainous terrain. The Lower New England/ Northern Piedmont ecosystem is dominated by eastern white pine mixed with both northern hardwood and oak-hickory forest on hilly glacial soils. The North Atlantic Coast bioregion includes pitch pine and other species that can survive on deep sands from post-Pleistocene beaches.

Watersheds provide an alternative approach to defining bioregions. In my corner of North America, an appropriate bioregion is defined by the Gulf of Maine, a large bay of the Atlantic Ocean. The deep Gulf is nearly cut off from the deep Atlantic by the shallow water of Georges Bank, which stretches far east from Cape Cod, and by Brown Bank, which stretches south from Nova Scotia. The Gulf of Maine is characterized by generally cold waters that mix poorly with the warm Gulf Stream farther off the coast. If sea level dropped 100 meters, the Gulf would be a sea connected to the Atlantic only by the 25-mile wide Northeast Channel. The Gulf of Maine and the watersheds of all the rivers that flow into it create a well-defined bioregion containing the Gulf itself, all of Maine, half of New Hampshire and New Brunswick, and parts of Massachusetts and Nova Scotia.

What connects these areas in ways that make it a well-defined bioregion? Perhaps the most important is the close connection between the people on the land and the cold waters of the sea. Lobster is the iconic animal! There is no dominant river. Though the Saint John covers one-third of the watershed area, the increasingly smaller rivers farther south are known to more of the human population: Penobscot, Kennebec, Androscoggin, Saco, Merrimack, and Charles. Each of these and many smaller rivers create many estuaries that link the land and the sea. These estuaries have been exceedingly productive of marine and bird life in the past but are less so now. The land generally slopes upward away from the sea to the 4000-foot peaks of New Hampshire and Maine, but vast flat areas of forest and suburbia, rather than hills or mountains, dominate.



Map modified from original created by Richard D. Kelly, Jr., Maine State Planning Office, for the Gulf of Maine Council on the Marine Environment.

The bioregion is easily divided into two sub-regions: a southern deciduous forest that contains most of the human population, including the metropolis of Boston, and a relatively unpopulated northern evergreen or boreal forest. The dominant land animal icon of the south is the human, and of the north the moose. "From Cape Cod to the Bay of Fundy", edited by Philip Conkling, provides an excellent guide to this bioregion. "The Rim of the Gulf", edited by David Platt, characterizes with beautiful photos the

natural history and the problems of Gulf estuaries, the interface between land and sea. The Gulf of Maine Council on the Marine Environment, an international coalition of various organizations publishes the Gulf of Maine Times, which is available online. Calloway's "Dawnland Encounters" describes the prehistory of the bioregion, both its geology and its native peoples. The Granite Earth Institute has chosen the Gulf of Maine and its watershed as its bioregional focus.

Other bioregions in the political entity known as New England include the Connecticut River Valley, the watershed of Lake Champlain, and the Berkshires/Taconics in the southwest. Tom Wessel's book "Reading the Forested Landscape" describes the forces that have affected and are affecting the forests of these bioregions. "Reading the Mountains of Home" by John Elder provides a good introduction to the Champlain Bioregion . He says "the challenge is to climb the trail and look around, to register every detail of the scrappy woods and experience the story of the landscape as a seamless and inclusive web." *Every bioregion should have a book like this.*

Connecting With My Bioregion

Some years ago my wife and I participated in an Earth Institute study group called "Developing a Sense of Place". At the conclusion of this group, we decided to reduce our travel to distant places to orienteer, visit relatives, or sight-see. We chose to travel within the Gulf of Maine bioregion, in which we had lived practically all our lives but had seen relatively little. What does it mean for me personally to say "I live in the Gulf of Maine Bioregion"? It gives me an ecocentric framework on which to hang my knowledge, interest, love, and concern. It gives me a closer connection to Earth than saying just "I live in the state of New Hampshire".

When we bought our place in Upper Saco River watershed of the Gulf of Maine four years ago, I immediately began to make a running map of the roads and trails around us. With my previous experience of making maps for orienteering competition I could put together existing maps, aerial photos, and exploration with a GPS. I mapped our housing association and built some new trail to make a one-mile loop around it. All this gave me much deeper knowledge of local geography than just the road to the grocery store.

Two days ago my wife and I snowshoed for a couple of hours in the "block" across the street, partly on already snowshoed paths and partly through untracked woods. We learned a bit more about

the topography of the area, a small marsh, a steep hillside, a nice cliff, and local trails connecting various pieces of woods between houses and condos. The woods vary from large open white pine and hemlock through steep south-facing oak forest, to moderately thick cutover. Although partially developed in this southwest corner, this "block" is 75 miles around in summer, and 100 miles around in winter. The "block" contains six four-thousand foot mountains and a number of lesser summits, including Kearsarge North, which climbs 2600 vertical feet from our house. I find a real connection to my local natural world when contemplating that we could have kept snowshoeing north for almost 30 miles without crossing a plowed road.

In the opposite direction we have 10,000 people in our Town of Conway, with shopping malls and ski areas that bring in thousands more as tourists. We chose this location for our retirement because of its proximity to both human and natural, indoor and outdoor, relaxed and energetic activities, including a close connection to forest and mountains with their native species of plants and animals. We chose this area to live in because we had earlier often chosen it to play in and at times to work in. We identified with the White Mountains, and the Mount Washington Valley in particular, because of long-term associations. We feel a connection to this place because we know it, with all its beauty, its history, and even its human development. We understand how it works, both in its original natural form and in its human-modified form. And we love it. This is the essence of a sense of place.

Travel

Throughout human history, and perhaps in the history of all species (e.g. Jonathan Livingston Seagull), a few individuals have always had an urge to explore outside the boundaries of their local community, even of their own ecosystem. *Perhaps evolution requires such individuals.* In the 17th to 19th centuries, part of science focused on "natural history", the discovery, naming, and classification of new species. Naturalists such as Linnaeus, Audubon, and Darwin looked closely at nature and tried to understand it. The combination of scientific and explorer genes led these and many more naturalists to explore the whole world in order to document its "animals, vegetables, and minerals". Over the 20th century, science has moved into more exotic spheres. Now there is essentially no funding for natural historians; there are very few scientists documenting unknown species though we know there are thousands of them (mostly small). We may be losing many species we do not and will not ever know

about. Bioregionalism may help by fostering amateur naturalists who become specialized in their local flora and fauna.

The tendency to travel to exotic locales purely for pleasure developed in the nineteenth century, aided by fossil-fuel-based steamships and trains. Educated Americans took the Grand Tour of Europe, capped with excursions to Egypt and Palestine. Today much international travel consists of vacations to exotic places. As awareness of adverse human impacts on Earth increases, an increasing amount of travel is "ecotourism" (see the Ecojustice chapter). Although ecotourism has noble goals, such as development of "green" tourist facilities and creating positive relations with local peoples, it still burns a huge amount of fossil fuel and creates a huge amount of CO_2 (see the Ecojustice chapter). Paying to plant trees to "offset" ecotourism emissions just isn't sufficient (see the Energy chapter).

Bioregionalism itself is not free from long-distance travel. As with much "green" change, national and even international conferences are held to discuss the subject. There have been a whole series of North American Bioregional Conferences inducing who knows how much long-distance travel. On the good side, the Bioregional Congress web site includes a detailed description of how to form a bioregional congress to bring together activists from a small area.

Bioregionalism fosters getting to know your own bioregion well, rather than traveling to exotic bioregions elsewhere. Bioregionalism emphasizes that one's own bioregion can be exotic if we look closely enough, if we learn enough about it. People from far distant places come to the Gulf of Maine to see bears and moose, eat lobster, and hike, ski, climb, or just look at mountains, ocean, and autumn foliage. One's own bioregion can be a pretty exciting, fascinating place!

Conservation Biology: Preventing Further Loss

"The stuff of evolution, genetic diversity, is being drastically reduced. The survival pack of this green earth, the age-old information which was held in store against fire, flood, drought, earthquake, hurricane, ice age and more subtle environmental change is being destroyed in the name of progress. The subsistence fields, waste places, wilderness, National Parks and Nature Reserves of the world thus take on a new and vital role. They can no longer be regarded as anachronisms in the 20th century to be swept away by short-term grant aid and megabuck development. Each one is a part of a genetic storehouse, a unique investment of immense value to the future." – David Bellamy ["Bellamy's New World", p. 183]

Who was the first North American conservationist? Perhaps some prehistoric hunter/philosopher who recognized that humans were eating up various species of large mammals and urged, in vain, limits on the killing of giant sloths and mastodons. In recorded history we believe that native North Americans lived in a steady state with nature, but that early settlers in New England began "resource" extraction such that "mast trees" soon had to be protected as property of the King of England. Ecoshifters often raise the ecocentrism of "indigenous" peoples in contrast to the practices of Western affluence. This tendency ignores the fate of the Anasazi, of Easter Island, and of the many times and places in Eurasia that native populations have outrun and destroyed ecosystems to the point of running out of food, fuel, and housing. *Perhaps all human cultures expand their populations in "good times" while adversely impacting their support systems so that they cannot withstand "bad times" like cooling climate or drought.* Although all species may do this, humans are the first in the known universe that can discuss the whole process and what to do about it.

In 1864, the first famous American conservationist, George Perkins Marsh, described in "Man and Nature" the effects of introduction of exotic

species of plants and animals, the extinction of species, the effect of forests on reducing erosion, floods, and landslides, and much more. He describes the unpredictability of human modifications of ecosystems, ending the book with

> "Our inability to assign definite values to these causes of the disturbance of natural arrangements is not a reason for ignoring the existence of such causes in any general view of the relations between man and nature, and we are never justified in assuming a force to be insignificant because its measure is unknown, or even because no physical effect can now be traced to it as its origin. The collection of phenomena must precede the analysis of them, and every new fact, illustrative of the action and reaction between humanity and the material world around it, is another step toward the determination of the great question, whether man is of nature or above her."

These questions, of the uncertain effects of human actions and of the relation of humanity to nature, underlie the discussion in this chapter, which is largely about repairing human damage to natural systems. Thanks to my own experiences in forest science and to many articles in "Wild Earth" magazine, now unfortunately deceased, this chapter will be a lengthy one.

For the 150 years since Marsh wrote, debate continued on what constituted appropriate human use of land. Anthropocentrism ruled. Land was to be **used** by humans to produce wood, water, wildlife, recreation, housing, farms, or cities. Land that was not so used was variously called "waste land", "derelict land", abandoned land", "empty lot", "vacant lot", "non-timber forest" (by foresters), or "rough stony ground" (by soil scientists). Few people valued such land even though it supported millions of other species.

The term "conservation biology" apparently was first used in the 1970s to describe the integration of ecological science with conservation. Edward Grumbine calls conservation biology "the science of scarcity and diversity". This chapter covers various predecessors and current thinking in conservation biology, and includes sections on pollution control, conservation versus preservation, protection, gene pool preservation, endangered species (including charismatic megafauna), exotic invasives, biodiversity, fragmentation, restoration, ecosystem management, and evolution.

Pollution Control

Dave Forman [Wild Earth, Winter 1996/97, p.3] said: "I see conservation (land and wildlife protection) and environmentalism (pollution control) as two separate movements with different histories, participants, messages, and priorities." After a slow start with the protection of Yellowstone and other National Parks in the late nineteenth century, conservation began in the United States around the beginning of the 20th century with growing concern about destruction of forests, and was aided by response to agricultural erosion and sedimentation from the Dust Bowl. Environmentalism, on the other hand, really got going after publication of Rachel Carson's "Silent Spring" in 1962, and reached a public relations peak with Earth Day 1970.

There is no need to belabor the many successes of environmentalism in protecting humans from pollution. Here is a partial list of achievements in emission reduction:

- Septic and sewage input to water bodies is greatly reduced.
- Chlorinated hydrocarbon pesticides are no longer used in the U.S.
- We recognize the problems of asbestos, PCBs, and mercury.
- Lead has been removed from gasoline.
- Emission of chlorofluorocarbons that destroy atmospheric ozone is reduced.
- Motor vehicles have air pollution reduction mechanisms.
- Power plant emissions of SO2, one cause of acid rain, are greatly reduced.
- We comprehend leaching of fertilizer from agricultural land to water bodies.
- Agricultural practices prevent catastrophic erosion by wind and water.
- Forest management generally controls erosion and sediment production.

On the other hand, Jeffrey St. Clair, in "Been Brown So Long It Looked Like Green to Me" documents the difficulty of maintaing these political achievements and how far we still have to go to eliminate pollution completely.

We rely on natural systems to absorb and process pollutants, though sometimes we discover belatedly that this does not always work. Disposal of sewage effluent and sludge on forest land has had mixed reviews, because heavy metals such as mercury, lead, and cadmium may accumulate to the point of being toxic to the system. Many artificial organic molecules do not break down in nature, notably DDT and other chlorinated pesticides, and toxic chemicals like PVC and PCB. The second principle of The Natural Step (see the Sustainability chapter), "substances

produced by society can not systematically increase in the biosphere", gets violated routinely.

Forests, and all other green plant covers, absorb carbon dioxide, combine it with water in photosynthesis, store the organic molecules produced as wood and leaves, and emit oxygen as waste. Much has been made of the capability of forests to absorb the pollutant carbon dioxide, though the Energy chapter describes how this has been over-hyped. Regrowing forests can only store the amount of carbon that was released from them at the time they were cut or burned.

Forests (and all green vegetation) have also been over-hyped as necessary to provide us with oxygen to breath. Although it took photosynthesis over a billion years to produce the oxygen in our atmosphere, current photosynthesis is not needed to maintain this oxygen. Wallace Broecker [1970. Man's oxygen reserves. Science 168:1537] showed that if photosynthesis stopped today we would run out of food long before we even noticed reduced atmospheric oxygen.

Nitric and sulfuric acids are emitted into the atmosphere by fossil fuel burning. The constituent nitrate, sulfate, and hydrogen ions fall onto all of Earth's surface, including forests, as acid rain and snow. The nitrate is quickly converted to organic nitrogen by soil organisms, and becomes part of the internal nitrogen cycling of the system. The nitrate input thus acts as a fertilizer in forests, most of which are chronically nitrogen-poor. However, after a sufficient amount of nitrate has been added the system will become saturated and any additional nitrogen will move into streams and lakes. All the sulfate on the other hand, moves downward through the soil and eventually reaches streams. Neither the sulfate nor the nitrate are problems in the forest soil, but the hydrogen ions that they bring in with them (the acid component) cause havoc. The concentration of hydrogen ions is sufficient to displace ions of calcium, magnesium, and potassium from the organic and mineral particles that hold them in the soil as nutrients. These ions then move with nitrate and sulfate into the soil water and downward with the water into streams, reducing the amount of nutrients in the soil. Calcium, magnesium, potassium, and nitrogen additions to water bodies cause eutrophication. The direct addition of hydrogen ions to water bodies by precipitation causes acidification and loss of biological activity. The problem of acid rain has generated government efforts to limit sulfur emissions from power plants and nitrate emissions from automobiles, but the problem has been only partially eliminated. Clearly the capacity of forests to clean up future acid rain is limited.

Conservation Versus Preservation

In "Forest and Crag", a history of hiking trails in the northeastern United States, Guy and Laura Waterman express the two early goals of the Appalachian Mountain Club, founded in 1876, as "exploration" of the wild and "improvements" for recreation. They say: "In this divergence, apparent in the very earliest structure of the AMC, lie the taproots of the debate between preservation and use which divides the conservation movement of the late twentieth century" [p. 200].

Government giveaway of vast lands in western North America and wide-spread destructive logging in both east and west created movements for change in the late nineteenth century. "Preservationists" induced Congress to create the National Park Service, with its congressionally-proclaimed National Parks and its presidentially-proclaimed National Monuments, and "conservationists" induced Congress to create the U.S. Forest Service with its congressionally-proclaimed National Forests. The difference concerned the uses to be made of the designated areas. National Parks and Monuments were and are established to protect scenic beauty for human enjoyment and recreation. National Forests were established to be managed for wood production, flood protection, water supply, grazing, wildlife production, and human recreation. Debates over which was more important, about the details involved in the principles, and over where and how much, have raged ever since. More or less by default, remaining federally-owned lands became managed by a third agency, the Bureau of Land Management. Other important federal land-management agencies include the U.S. Fish and Wildlife Service, the U.S. Department of Defense, including the Corps of Engineers, the Bureau of Reclamation, and the Tennessee Valley Authority, making a hodgepodge of political confusion and red tape. Similar actions at the state level generally produced state parks, state forests, and state fish and game lands, each run by a different state agency.

In "Wars in the Woods", Samuel Hays documents the conflicts over land management among the various agencies at both federal and state level. I have covered some of this conflict under "Myths of Sustained Yield and Multiple Use" in the Sustainability chapter. His "Wars" between commodity forestry, as practiced by professional foresters, and ecological forestry, as promoted by scientists, can be seen as a continuation of the conflict between conservation and preservation, between multiple objectives and single objectives, and even between anthropocentric and ecocentric worldviews. The new ecosystem approach is gaining ground, but slowly. Under the second Bush administration, the U.S. Forest Service has given only lip service to "ecosystem management", which just seems to be a euphemism for business as usual.

According to Hays, ecological forestry de-emphasizes wood production in favor of :

- diversity of plants, wildlife, species, habitat,
- watershed protection,
- restoration of fire where natural/appropriate,
- preservation of old growth,
- restoration of charismatic megafauna,
- reduction of human threats from logging, dams, motorized recreation, development, and
- reduction of road systems.

To varying extents, the battle between commodity production and ecosystem protection applies also to freshwater fisheries versus aquatic ecosystems, salt-water fisheries versus ocean ecosystems, grazing versus grassland ecosystems, desert recreation (ATVs) or plant harvest (cactus) versus arid ecosystems, and mountain recreation or water supply versus montane ecosystems. The battle is between maximizing production of a commodity or "natural resource" for human use versus protection of the functioning ecosystem itself. *There are many debatable and debated questions involved, but the basic difference is still anthropocentrism versus ecocentrism.*

David Rothenberg points out that "National Parks are for people, not for animals, plants, or the spirit of the wild. A national park means traffic, overuse, extensive tourist facilities, too much publicity" ["Quiet Preservation: Don't Make It a National Park", Wild Earth, Summer 2000, p.57]. Designated wilderness areas also become a recreational destination for hikers, backpackers, and climbers. The purpose of the Wilderness Act of 1962 is "to secure for the American people of present and future generations the benefits of an enduring resource of wilderness". The purpose is not to protect ecosystems and their non-human life-forms, but to protect human enjoyment of the wild. The criteria that qualify an area for designation have been endlessly debated, especially in legislatures and courts. The opposition to wilderness claims that there is too much already, but the total area of designated wilderness in the lower 48 United States (49 million acres) is only three times the total area of pavement (16 million acres)!

A particularly hot wilderness issue involves roads. The U.S. Forest Service maintains about 400,000 miles of roads, more than any other single road agency in the country. Those opposed to wilderness have argued that wilderness must be free of **any** signs of human impact, especially any abandoned roads, so only "roadless areas" can be candidates for wilderness. Congress now finds it acceptable to allow former roads as long as they have been "put to sleep", or restored to semi-natural conditions. To truly protect naturalness, wilderness areas should be minimally surrounded or penetrated by roads in order to reduce access by both exotic invasive species (see below) and humans (for backpacking, hiking, backcountry skiing, fishing, hunting, and off-road vehicles).

What kind of management should or should not be done in designated wilderness? Despite its sound, "wilderness management" is not an oxymoron, because wilderness is an anthropocentric term that is not the same as "wild". A number of human uses are allowed in wilderness, including:

- "primitive" recreation, including horses and motorized vehicles in many areas,
- hunting and fishing,
- resource extraction by mining and drilling, and
- grazing, which is practiced on 35% of U.S. designated wilderness.

Various forms of control on these activities are debated, but little progress gets made toward greater restriction.

Wilderness designation has been the primary focus of protection efforts involving National Forest land, but other methods are being proposed and used for protection of other federal, state, and private lands. "Biosphere reserves" can be created by many different agencies, including those designated by the UNESCO's Man and the Biosphere program. UNESCO Biosphere Reserves "innovate and demonstrate approaches to conservation and sustainable development" and are "living laboratories for people and nature". In my own Gulf of Maine bioregion, RESTORE: The North Woods proposes that a significant part of northern Maine be made into a National Park to protect it from timber harvest and private development.

On the private level, various state and national non-profit groups have long been buying and protecting land in the form of "sanctuaries", primarily to protect wildlife. Often these sanctuaries were created without much regard for the larger ecosystem in which they are embedded. As a result, many sanctuaries are protected patches in the midst of developed or unprotected areas, and serve more as parks for human recreation than as true wildlife preserves. Desire to protect land from development for housing, recreation, commerce, or industry can be based on aesthetics, on agricultural or timber value, or on an ecocentric worldview. In the past decade or so, conservation easements have become the favored method for protecting forest, agricultural, and grazing land.

A conservation easement carries the legal weight of a title deed. The landowner can donate or sell a permanent easement to a government agency or private organization, often with favorable effects on income and estate taxes. The easement document spells out in great detail exactly the purposes for which the land may still be used and what uses are henceforth legally prohibited. The easement holder is responsible for ensuring that the legal restrictions are followed. Each easement transaction uniquely depends on the landowner's family situation, desires, and need for money, the proposed easement holder's purposes and capabilities, need for surveys and evaluation, and sources of funding.

These often make the easement process complicated and lengthy. Nevertheless, conservation easements are widely used for properties ranging from just a few to many thousands of acres. According to the Land Trust Alliance, 1600 land trusts in the United States hold conservation easements protecting 36 million acres of land.

Gene Pool Preservation

Humans have been modifying the genetics of plants and animals since the beginnings of agriculture 10,000 years ago. It is called "breeding" and involves selecting individuals with desirable properties and then helping them to reproduce. Nature has been doing this for the whole history of life on Earth; it's called evolution by natural selection.

Quite recently, human society has become aware of the rapid rate at which humans are causing extinction of other species. Because we humans do not know how to create a gene, *and may never know*, each loss of a species or subspecies means Earth has lost all the genes that are unique to that species or subspecies, and that species and those genes can **never** be recreated. In particular there is great concern about loss of genetic diversity (that is, loss of specific genes) within domestic species of plants and animals.

Worldwide, only a few species of cereal grains (maize, rice, wheat, barley, and sorghum) provide most of the food energy for humans. Since the Green Revolution of the 1970s, commercial agriculture uses only a few varieties of each of these grains. The thousands of other varieties that farmers have developed for their local soil and weather environments are declining in use and are disappearing. This is a serious problem of globalization, so serious that "gene banks" have been established to store seed from varieties of plants that are becoming extinct. *Only time will tell whether seed preservation is successful and useful; there is some doubt.* On the animal side, preserving genes is more difficult than saving seeds. The American Livestock Breeds Conservancy works to preserve domestic animal breeds that are no longer in favor. For large wild animal species close to extinction, zoos have been a primary means of saving a species, with a few notable successes. California Condors became extinct in the wild, but have now been reintroduced to their original habitats from birds bred in zoos. The Mauritius Kestrel and Tennaserim Green Peafowl are other examples (see the Wikipedia entry "Captive Breeding"). Pere David's deer existed for many years only in zoos, but has been reintroduced to the wild in China.

Much concern about gene pool preservation arises from potential uses for humanity and thus is anthropocentric. Efforts to prevent a charismatic species from becoming extinct also seem anthropocentric. Ecocentrists raise issues of loss of thousands of species, many of which we have not even identified yet. *From all viewpoints, wouldn't protection of ecosystems with all of their species and continued natural evolution be preferable to seed banks and zoos?*

Endangered Species

"Charismatic megafauna" describes those species of large wild animals that greatly interest some people because they are scarce. These are the species that people "want" to see for reasons that may be best described in the Ecopsychology chapter. In my bioregion the charismatic megafauna are moose, bald eagle, peregrine falcon, black bear, common loon, and all species of whales, seals, and porpoises. Excursions are made to see these species, efforts are made to protect them, and traffic tie-ups are caused by sightings of them. Conservation organizations often focus on one or more charismatic species because people will financially support work on these species. One can debate the pros and cons of using charismatic species to get people concerned. *Does it lead them to thinking more ecocentrically or does it suggest that protecting and preserving these few species is all that needs to be done?* To the extent that it motivates people to learn about endangered ecosystems concern for charismatic megafauna has great benefit. We are seeing this now in the plight of the polar bear; concern for the species is educating people about the whole issue of global warming and motivating some to burn less fossil fuel.

Many charismatic species are the top-level predators in their ecosystem. These are the species that humanity has worked hard to eliminate because of perceived, and rarely real, threats to livestock and to human children. Consequently their ranges have been severely reduced. Ecocentric thinking motivates many efforts to restore these species to their original ranges. The timber wolf of North America is a prime example, spawning various organizations such as the Maine Wolf Coalition and the Timber Wolf Alliance. Major conflicts exist between those who see high-level predators as indicative of and necessary to well-functioning ecosystems and those who manage livestock to provide meat for humans. George Wuerthner summarizes the difficulties in "Wolf Restoration a Success?" in the "Cowfree" section of the Range Biome web site.

As opposed to charismatic species, species that are **useful** to humanity can also generate concern when they become endangered by over-consumption. Many species of fish fall into this category; a whole industry may die because a species becomes rare. In the Gulf of Maine bioregion the Atlantic cod is a prime example.

On the other hand, a single charismatic species can be sufficient to protect a whole ecosystem, as with the Spotted Owl in northwestern U.S. old-growth forests. Government-imposed limitations on over-harvest of useful species or government protection of a charismatic species always draws the "jobs" argument – "these limits will put X number of people out

of work" – often with little recognition that continued "business as usual" will eventually put them out of work also.

In contrast to the somewhat anthropocentric preservation of charismatic species, the term "biodiversity" expresses an ecocentric approach. Its original scientific meaning is a quantitative measure of the number of different species found in an area. Ecologically, more species and thus greater biodiversity means a healthier ecosystem, which is more resistant to change and more resilient in recovering from damage. (This does not apply to fragmented areas, see the section on "Fragmentation" below.) In general, loss of species, and thus decreasing diversity, means something is going wrong with ecosystem function. E. O. Wilson has developed an international reputation for calling attention to the problems of loss of biodiversity and species extinction at global scale. Although it is difficult to estimate the rate at which Earth's species are going extinct (partly because we don't even know what species there are), everyone agrees that the rate is high, probably between 20,000 and 2 million in the past 100 years. This extinction rate has probably never been exceeded in past history, even by such cataclysmic global events as the meteorite strike that wiped out the dinosaurs 65 million years ago. Biodiversity expresses an ecocentric sense that species should be protected and preserved for their own intrinsic value, not just for human usefulness or awe.

In "Green Space, Green Time" Connie Barlow discusses a framework for determining what species and ecosystems should have highest priority for protection. Clearly money, effort, and time are not available to deal with all endangered species and systems. Her criteria are:

- living fossils – species that have played a major role in the "pageant of life", such as coelacanth, nautilus, and gingko,
- imperiled lineages – species that are only distantly related to any other species, such as giant panda, hoatzin, and the rift lake cichlids of Africa,
- unique adaptations – species that have evolved special characteristics, such as the Komodo dragon and the Venus flytrap,
- elaborate mutualistic relationships - species with unique behavioral characteristics, such as orchid-wasp pollination pairings and migrating monarch butterflies,
- hot-spots of biodiversity - locations where evolution is likely to be proceeding rapidly, such as Hawaii and parts of Mexico
- keystone species – species that are indicative of ecosystem health, like the wolves mentioned above,
- endangered species – species or subspecies threatened with extinction locally, regionally, or globally
- photosynthetically important areas – landscapes and seascapes, such as forests, coastal wetlands, and plankton-rich areas of ocean, and

- unique function – species or genera that contribute to ecosystem function in important ways, such as nitrogen-fixing bacteria and ocean coccolithophores, which generate dimethyl sulfide required for marine cloud formation.

Humanity has altered or destroyed vast areas of Earth's marine, fresh-water, and terrestrial ecosystems in the name of increased productivity for human use. **Humans now consume 30 to 50% of all the biomass energy produced by worldwide photosynthesis each year.** We use it for food, fuel, housing, wood and paper products, and feed for domestic animals. It took Earth five billion years to learn how to do photosynthesis as efficiently as possible for a given climate and soil while maintaining sustainable ecosystems. Humans, always thinking they can do better than nature, have greatly modified terrestrial ecosystems through agriculture, grazing, and forestry, and have overharvested species in aquatic systems. In reality our knowledge is superficial. We don't know the long-term consequences of extinction of a large and unknown number of species and the near elimination of many ecosystems, such as the tall-grass prairie of North America. We don't know, and may never know, how to artificially reproduce photosynthesis. *Species and ecosystem extinction represents genocide on a massive scale, and is likely to become worse as growing human population drives our consumption of photosynthetic products even higher.*

Exotic Invasives

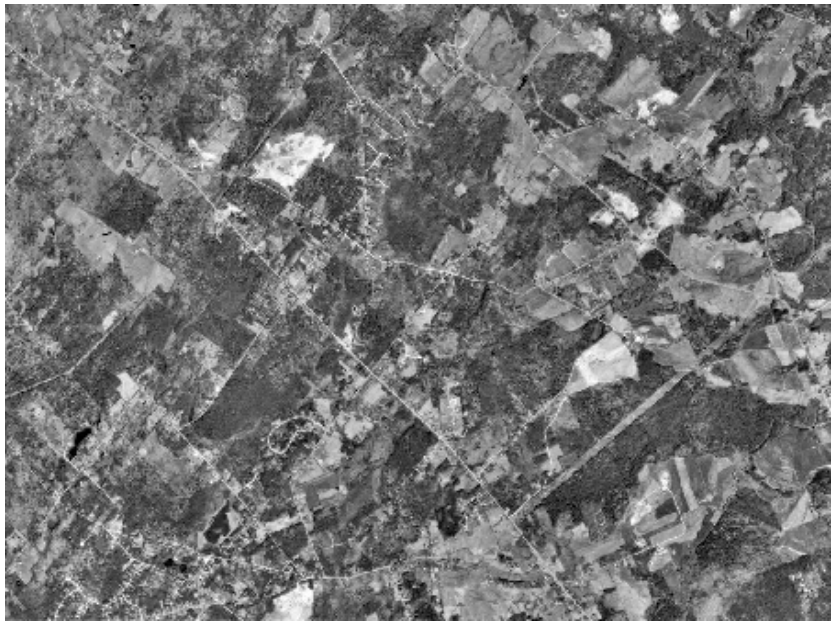
In contrast to some species going extinct, other species are spreading like wildfire. Species that are not native to an ecosystem but have been introduced to it, usually by humans, and have the potential to seriously affect ecosystem functioning, are called "exotic invasives". A list of exotic invasives for any given ecosystem is lengthy, because human activity is so pervasive. Exotic plants like phragmites, purple loosestrife, English ivy, bittersweet, milfoil, and kudzu are literally taking over some North American ecosystems. Exotic animals like mute swans, Nutria in Chesapeake Bay, and zebra mussels in the Great Lakes are having serious adverse effects. Insects and diseases also can be exotic invasives, like the fungus that wiped out American chestnuts, and the adelgid insect that is destroying eastern hemlock. The National Invasive Species Information Center has much more information. Whether a species is introduced intentionally or unintentionally, the cause is the same – human ignorance of the potential behavior of the species in a system that is not prepared for or resistant to it.

I want neither to minimize the importance of exotic invasives, nor to lengthily debate what to do about them. "Letting nature take its course" is appealing to a deep ecologist like me who respects all life. But so many systems have been so seriously disturbed by exotics that restoration

ecologists have to work very hard at controlling them. Humans need to try to fix what we have damaged and in some places this may mean a concerted effort to remove an exotic species. This issue merges into the larger issue discussed below under "Restoration Ecology".

Fragmentation

Fragmentation is the breaking up of generally uniform ecosystems into a checkerboard of various systems. Fragmentation favors exotic species, favors predators, and excludes large carnivores. Fragmentation causes genetic erosion when a group of individuals must remain in its fragment and cannot breed freely with the rest of their species. Such inbreeding can cause loss of the whole group and in many cases loss of a whole species. Wikipedia has a good article on "Habitat fragmentation".



Standish/Gorham ME from TerraServer orthophotos

Fragmented areas have lots of "edge", known technically as "ecotones", which are the boundaries between ecosystems. Although species diversity increases where there is lots of edge or lots of variation in stages of succession, such diversity does not make an edge more stable than a large undisturbed ecosystem. Many of the additional species are likely to be exotics, meaning they do not belong in the original ecosystem. Exotics can overwhelm native species. Some of the additional species are pests that develop better in disturbed areas. For example, cowbirds, which

lay their eggs in the nests of other birds and out-compete the other nestlings, thrive on edges. Other adverse effects include domestic animals such as cats and dogs, and altered microclimate. Roads are a major cause of fragmentation, both because they are movement barriers for some species and because they produce "road-kill". Conservation biologists have developed methods such as overpasses and underpasses that allow wildlife to cross roads safely.

Conservation biology emphasizes a need to defragment landscapes as well as preventing further fragmentation. In my bioregion, the southern Gulf of Maine, fragmentation was maximized by farming and logging in the 19th century and has been partially reduced more recently due to farm abandonment. New England in 1830 was 85% cleared land, but has recovered so that now it is 85% forest land. Undoubtedly this is why such species as beaver, moose, and black bear have recently become much more abundant. Efforts to protect large remaining blocks and to consolidate or connect separate blocks will be discussed below under "Ecosystem Management".

On the other hand, farm consolidation is a form of defragmentation that may not have a favorable natural purpose. In England it involves destroying hedgerows between small fields to make larger ones, thus destroying the unique hedgerow ecosystem that has developed over centuries. In the western United States, vast agricultural monocultures are ecologically simple and cannot be considered improvements over smaller, more varied farms.

Restoration Ecology

Restoration ecology assumes that humans should fix what humans have damaged or destroyed. It is a new scientific and technological field involving restoration of human-modified ecosystems to their original functionality. The Wild Earth Spring 2001 issue describes three levels of restoration. "Reconstruction" is needed for systems that are so damaged they cannot heal themselves, such as gravel pits, landfills, and mine wastes. "Rehabilitation" attempts reversion to original conditions, but substitutions may be necessary and large predators may not be possible. "Restoration" implies a return to nearly-original functioning, with large areas of land supporting top-level predators and normal functionality at all levels of the food chain. Connie Barlow, in "Green Space - Green Time" describes three fundamental "polarities":

- a polarity between restoration and preservation,
- a polarity between to intervene and not to intervene, and
- a polarity between stability and change.

"In the Service of the Wild" by Stephanie Mills documents the fervor one can feel in doing restoration work. Getting hooked on protecting a

charismatic species or attacking an exotic invasive species has led many people into ecocentrism. In contrast, Robert Eliot strongly questions restoration in "Faking Nature". He does not say we should not do it, but that we must recognize that we cannot duplicate nature. *Restoration may foster a sense that it is OK for us to make a mess as long as we clean it up.* "Restoring" strip-mined mountain-tops (if they have any left) is a prime example.

Ecosystems must respond frequently to naturally-induced slow or rapid changes. Succession rarely marches stolidly from "pioneer species" to a stable "climax" after major disturbance. Most ecosystems are now recognized to be in a "shifting mosaic" steady state, in which minor disturbances to different areas of the system occur frequently, so the system as a whole is always in some form of recovery. Disturbance is now seen as normal rather than as abnormally rare. Insect outbreaks, disease, fire, wind, ice, volcanism, drought, and landslide occur over various space and time scales. Unfortunately, many of these instabilities have been used as justification for further human destabilization. "Salvage" logging of pest-damaged forests supposedly reduces the potential for fire, but often is an excuse to cut where cutting had previously been restricted. Wildlife management openings are created to supposedly "mimic nature" when their real purpose is to provide hunters with game. Such practices in normally-functioning systems should not be confused with restoration.

Compensatory mitigation, or wetlands trading, allows creation of artificial wetlands elsewhere to replace natural wetlands destroyed by development such as highways,, shopping centers, airports, housing developments, and golf courses. The problem is that such mitigation usually does not work. Construction of artificial wetlands has demonstrated over and over again that we cannot restore/reproduce the original state of an ecosystem. The artificial replacement may be wet and even weedy and may support mallards and Canada Geese, but it won't work the same as the ecosystem it replaced. Humans may never be able to create the complexity of the thousands of species involved in a natural living system. Inexperience, lack of knowledge, lack of desire, lack of monitoring, and lack of significant penalties all contribute to low success rates of compensatory mitigation.

When a system is so severely damaged by humans that it is incapable of recovering on its own, there is much debate about what to do. How active should restoration be? What can it accomplish? What can it not accomplish? Current thinking tends toward a three-step approach:

A. designate as protected,
B. restore in various ways,
C. then keep hands off and let nature take over.

Trees for Life represents one geographic extreme of this approach. They seek to restore the original Caledonian (Scots Pine) Forest of the Scottish Highlands. Here are their Principles of Ecological Restoration.

1. "Mimic nature wherever possible
2. Work outwards from areas of strength, where the ecosystem is closest to its natural condition
3. Pay particular attention to 'keystone' species
4. Utilize pioneer species and natural succession to facilitate the restoration process
5. Re-create ecological niches where they have been lost
6. Re-establish ecological linkages
7. Control and/or remove introduced species
8. Remove or mitigate the limiting factors which prevent restoration from taking place naturally
9. Let nature do most of the work
10. Love has a beneficial effect on all life"

At the other geographic extreme is rewilding one's own yard, as described by Sara Stein in "Noah's Garden" *Mowed grass is an ecological desert. Flower gardens filled with exotics are anthropocentric and unnatural.* Restoration ecology would use native plants in relatively natural conditions in which all dead material is recycled by decomposition on site and further planting is unnecessary. I have said more about this at the end of the Housing chapter.

Restoration ecology needs to deal with the question "What are we trying to restore to?" Many New England bird species arrived here in response to clearing for agriculture and we are now concerned about their "decline" as farmland reverts to forest. Many people oppose efforts by RESTORE: The North Woods to bring back our large carnivores like wolves and mountain lions. Some people advocate bringing modern versions of extinct Pleistocene mammals, such as camels, cheetahs, and elephants, back to the North American Great Plains. Then there are the dilemmas of how to control/remove exotics from wilderness where human impact is supposed to be minimal, and how to reduce fuel levels in the western United States where even-aged management and prevention of all fires has created ecosystems that burn very easily.

Bird Surveys

I have been a birder since I was young and my father taught me the songs of hermit thrush, white-throated sparrow, and whip-poor-will. By high school I began participating in annual

Christmas Counts, in which a number of people count all the birds they can find in a 15-mile diameter circle on a day late in December. The National Audubon Society publishes results for counts throughout North and Central America each year. Summer or breeding birds are documented in North America in a very different way called the Breeding Bird Survey (BBS). Each BBS route consists of 50 three-minute stops along 25 miles of road early on a June morning.

For many years I did Christmas Counts and a BBS route in southeastern New Hampshire, covering the same areas each year. The birding itself provided enjoyable outdoor recreation and the occasional rare bird produced real highs. But the long-term result of repeated censusing created great familiarity with the effects of both land use and climate change on bird habitat and populations in my bioregion.

Brown thrashers, eastern towhees, field sparrows and chestnut-sided warblers are all breeding species that prefer the early stages of "old-field succession", which exists only for a few years after farm abandonment in New England. All these species declined rapidly to nearly zero over my BBS survey period because this specialized habitat was being lost to both housing development and forest regrowth. In the context of this chapter, should any attempt be made to maintain habitat for species like these that were scarce in the original forest, became abundant during 200 years of farming, and now are approaching regional extinction as farm abandonment ceases?

Another trend clearly seen in my Christmas Count and BBS results is the influx of southern species into New England. Tufted titmouse, northern cardinal, mockingbird, and red-bellied woodpecker were not present in 1970 but have become increasingly common. These and several other species are extending their range northward, probably in response to climate warming.

Rapid anthropogenic climate change will have many effects on ecosystem structure and function, but specific predictions are difficult. In the north temperate zone we expect to see tree species dying in the southern part of their range from drought or from competition with species that are favored by warmer climate or by increased insect and disease attack. Change in forest composition will affect all other species in the system from understory plants through all animals and microorganisms. A mean temperature change of over 1°F has already produced documented range shifts; the predicted change of 6°F or more is the equivalent of moving 200 or more miles farther south (roughly from

Boston MA to Baltimore MD). There is little point in trying to restore a species composition into an area where it will not be able to exist in 100 years. Apparently all we can do is try to restore naturalness and biodiversity, then leave nature to do as well as it can.

Ecosystem Management

The concept of conservation biology has moved conservation from an emphasis on sanctuaries in developed areas to protection of whole landscapes and ecosystems. J. Stan Rowe has described three kinds of ecosystems [The ecosystem approach to forest land management. Forestry Chronicle 68(2), 1992]:

1. artificial systems, such as farms, characterized by single use and high inputs of fertilizer, water, and energy,
2. semi-natural systems, such as forests, characterized by multiple resource extraction, and
3. natural systems, characterized by protection and preservation as "wilderness".

Ferocious arguments occur regarding where on this spectrum a particular piece of land or water should be. The arguments are particularly furious when the area involved is in "public" ownership, whether government land or "common" ocean. In general, there are no easy answers. In this section I will describe a few of the issues involved in managing whole ecosystems rather than individual tracts of land.

Where private land is involved, the "you can't tell me what to do with **my** land" attitude needs to be overcome. Our culture perceives ownership of private land as an indicator of wealth and achievement. The Wise Use Movement promotes private property rights in the face of perceived environmentalist efforts to eliminate them. Such private rights are believed to include not only ownership of land but also of everything under, over, and on it, including hunting and fishing rights, plant collecting rights, mining rights, and water rights. In reality, government (community) has always had the right to say what can and cannot be done on land. Land (in North America at least) was granted by the "state", and can be taken away by the "state". Government sets various restrictions on land uses and has separated mining and water rights from other property rights for over 100 years. Some ecoshifters argue against the concept of private ownership, preferring the attitude of indigenous peoples who treat land and water as "commons" belonging to the whole society. *A less radical position asserts that education about ecosystem protection and its purposes will take the individual rights argument out of private ownership.*

Larry Walker's Range Biome web site describes the issue of special use permits for grazing rights of private individuals or corporations on

public lands in the U.S. Political pressure from permittees and their supporters in the Wise Use Movement allows continued over-grazing, even in federally-protected Wilderness.

Overpopulation of recreationists competes with overpopulation of livestock in producing adverse impacts on public lands. If ecocentrism is to develop, many or most of the six billion human population need to know and respect nature. How can we get people into and concerned about the natural world without destroying it? In the U.S. the National Park Service tries to provide comfortable recreational/aesthetic opportunities for all its visitors and so develops hotels and RV campgrounds among other amenities. Consequently the National Parks are being overrun with people. *Somehow we need to educate visitors to wild lands, and the managers of them, that people simply cannot bring all the comforts of home to the wild.* And we need to spread the load more evenly by encouraging a bioregional and local approach that encourages visiting wild areas near home rather than distant travel (see the Bioregionalism chapter).

Perhaps the most difficult question for land managers asks how much ecosystem productivity can be diverted to human use. What is essential "capital" and what is the periodic useable "interest"? Natural systems were in a relatively stable and relatively steady state before humans came along. As stated earlier, natural systems have maximized their energy conversion efficiency for their given climate and geology. They have a high rate of internal cycling of nutrients, with low and equal inputs and outputs. As long as populations of large animals, including humans, remain low enough, recycling efficiency is maintained by the diversity and complexity of the ecosystem and the system remains sustainable. Since agricultural development in the last 10,000 years, increasing human population has greatly increased withdrawals from natural systems and has thus created input-output imbalance of organic matter and nutrients, with consequent instability and unsustainability. Strictly speaking, I believe the answer to the question about useable interest is "**none**". So humans must learn to return all waste products to the ecosystems from which they came, just as nature does.

The concept of "stewardship" implies continued use by humanity of natural systems, but implies that humans have a duty of care toward the systems that provide products for human use. The concept of stewardship appeals to many Christians because support for human stewardship of nature is easily found in the Bible (see the Ecospirituality chapter). The term is used by organizations promoting sustainable harvest of natural organisms, such as the Forest Stewardship Council, which certifies forest products, and the Marine Stewardship Council, which certifies fisheries. *The concept of stewardship appears sufficient for many involved in The Great Turning, but I feel it is still anthropocentric. It allows for humanity being at the top of the pyramid, and implies an ability of humans to "take care of" nature by managing it.*

Ecocentric conservation biologists visualize a multi-level type of land management zoning. This approach to ecosystem management has been developed by The Wildlands Project and described through the late great magazine "Wild Earth". The approach envisions "core areas" of designated wild land (formerly called "wilderness", but not necessarily federally-protected wilderness). These core areas would be as free as possible from human interference, leaving wild systems and species to function on their own and unmanaged. As with every other issue in this chapter, there is debate over how much human activity/influence to allow. For instance, should there be backpacking or trails? Around the core areas, there would be "transition areas" (formerly "buffer zones") of light human presence including hunting, fishing, some forms of outdoor recreation, and timber harvest under the rubric of "multiple use management" (see the Sustainability chapter). The third major category includes areas dominated by human activity and needs, that is, human living space. An important fourth category involves "connection corridors" between core areas; these corridors would allow interchange of living species of all sizes and types among core areas. The corridors must function well-enough ecologically and genetically to prevent isolation of species in any core. The Wildlands Project has promoted this approach in many bioregions of North America with some success, though obviously the rate of change is slow. Politically, the multi-level bioregional approach appears more acceptable by all sides than the former two-level national process of designated wilderness versus all other land.

Evolution

The Wilderness Act of 1964 states "A Wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." This statement, amazing for its time, recognizes the rights of non-human species to exist and evolve without influence of humanity. The Universe Story chapter documents the 5½ billion years of Earth's history and the multitudes of organisms that are part of that history. Evolution has created an amazing array of fascinating life-forms, completely independently of the species *Homo sapiens*, which is a real late-comer to the scene. Anthropocentrism teaches that all the species that came before were just preliminary to the development of human beings and that all the currently existing species are only relevant in terms of their usefulness to humanity. Ecocentrism, on the other hand, looks far into the future as well as far into the past. It recognizes that individual species exist only for a few million years before they are changed into something else (though many genera continue for far longer times) and that *Homo sapiens* will probably evolve into a new species of *Homo* in the short run and into something far different in the distant future.

Recognition of both the impermanence and current power of humanity makes ecocentrists wary of the potential effects of human-controlled evolution, and sensitive to a right of the non-human world to continue to evolve in its own way, free of human influence. *Humanity, after all, has proven itself a far from perfect species. We may be able to think deep thoughts, but we are not able to follow them through with deep actions. Humans seem to have innate propensities for domination, suppression, arrogance, racism, and war. Why then should humanity have a right to control, limit, or eliminate the evolution of other life forms that might sometime evolve into a "better" species than* Homo sapiens?

Ecocentrists believe that large areas of natural systems should be set aside to allow evolution to proceed without human disturbance because humans do not have a right to interfere with all of Earth. Michael Vandeman's web site has discussion and many links about why "Wildlife Needs Habitats Off-limits to Humans". I would like to see 50% of the area of all ecosystems protected in wild core areas and connecting corridors (see the end of the Sustainability chapter). I thought that 50% was my own radical desire, but apparently Noss and Cooperrider in "Saving Nature's Legacy" proposed this back in 1994. Clearly 50% is not a goal that can be reached immediately, but it could be achieved in a hundred years if it were coupled with one-child families so that human population would decrease to one billion over the same time period (see the Population chapter).

Ecojustice: Local and Global Community

"All the disparate popular struggles of our history to achieve justice for workers, women, and people of color, as well as the struggles for peace and the environment are subtexts of a larger meta-struggle against the cultural mindset and institutions of Empire." – David Korten ["The Great Turning", p. 215.]

"Whether it's environmental movements, peace move–ments, or cultural creative movements, they all want the same thing: respect for life. My suggestion would be to get together and create one big movement I would call The Reverence Movement. After all, the violence we inflict on ourselves and one another is the same violence we are using to destroy the planet. If every movement continues to treat the symptoms, we won't get anywhere. We're only wasting time and energy." – Aqeela Sherrills

Thus far, ECOSHIFT has concentrated on changing behaviors of the most affluent one-sixth of human population. This chapter concerns the other five-sixths of humanity, those who are too impoverished to choose voluntary simplicity or too powerless to affect corporations.

First, I assume that there is some general agreement about what is "just", "right", or "fair". *I prefer to use the word "respect" because I can more easily tell what behavior is respectful than I can what is "right" or "just".* Being respectful means trying to understand the thoughts, feelings, and purposes of others, whether those others are relatives, friends, or strangers, whether those others are of similar or widely differing race, culture, or religion, and even whether those others are humans or of other species or entities. Respect is the opposite of arrogance, and arrogance leads to injustice and loss of rights. Respect for all humans and respect for other species go together, just as arrogance can be directed both against people and against Earth. All world religions formulate the Golden Rule

as a simple statement of justice: "Do unto others as you would have them do unto you".

Ecojustice can be defined as the interface between greening and social justice, or the impact of so-called environmental issues on people who have to struggle for existence. This chapter shows that social justice and environmental problems have similar bases and many commonalities and that they are combined into the problems of sustainability and Ecoshift. Resurgence magazine and Hawken's "Blessed Unrest" emphasize this fusion and are major sources for this chapter.

Social Darwinism

When Charles Darwin's famous phrase "survival of the fittest" is applied to human individuals and cultures, the outcome is called "social Darwinism". Darwin, of course, never intended his thinking to be used this way. Social Darwinism means believing that if I can dominate you, then I am obviously superior and should survive, even if you do not. It is arrogance of the first order and consequently implies utter disrespect for those who "can't hack it". Dominance is expressed in a globalized world by having the most money, affluence, opulence, or wealth. This suggests not anthropocentrism, which puts all people at the center of the Universe, but a narrower more self-centered "-ism" that might be called fiscocentrism, wealthism, econocentrism, or affluencentrism. *(Oh well, maybe somebody else can come up with a better word.)* Or maybe materialism will have to do. The globalization of materialism exacerbates unsustainable practices while holding it out as a dream that can be achieved by anyone and everyone if they just work hard enough.

Social Darwinism has been wonderfully exemplified by Hugh Brody in "Maps and Dreams", which describes the impacts of Western or European culture invading the terrain of the natives of northeastern British Columbia, not in prior centuries, but in 1980. The impacts of capitalism on indigenous peoples are not only in distant lands or distant times. Brody shows how the "developers" of oil, farmland, and recreational hunting fail to connect with or understand the Beaver Tribe's hunter-gatherer culture, in spite of apparent efforts to do so. The white's "fairness" has not yet lost its patriarchal "we know what's best for you" attitude. The whites cannot understand why the Beaver want to continue to live the way they have for centuries, in voluntary simplicity and with a bioregional, ecospiritual, and deep ecological relationship to their land.

On a philosophical, rather than a practical level, debate continues about whether evolution and the natural world are primarily competitive or primarily cooperative. As with so many other presumed dichotomies, this one is really a continuum. Among individuals, among species, and among ecological communities a varying tension exists between cooperation/symbiosis/altruism and competition/dominance/predation. Lewis Thomas states that "the survival of the fittest does not mean those

fit to kill; it means those fitting in best with the rest of life." *Why does humanity have such a difficult time learning this lesson from nature?* Humans are, after all, the only species on this planet, and perhaps in our part of the Universe, that can contemplate these philosophical/ethical issues and decide to adapt and change its behavior.

Failure of Environmentalism

The environmental movement has long been chastised by those concerned with human rights and justice for failure to consider problems of people and communities. Although both movements reached highs around 1970, the environmental movement and the peace/justice movement were rarely related or connected until recently. "Environmentalism Unbound" by Robert Gottlieb explored the failure of environmental organizations to consider hunger, health, and safety issues. In 1993 Paul Hawken said "So far the environmental movement has only made the world better for upper middle class white people." [A Declaration of Sustainability, The Utne Reader Sept-Oct 1993]. Philip Shabecoff wrote in "Earth Rising" about how mainstream environmental organizations need to expand their vision into politics and economics.

Now more and more writers are recognizing the deep connection between dominance over people and dominance over Earth, between our oppression of our own species and our oppression of other species. These writers recognize that impoverished people are not likely to be environmentally "correct". In fact, they are much more likely to be environmentally "dumped on". Trashing of the environment and trashing of the poor go together. Addressing the issues of the human relationship with Earth cannot be done without also addressing the relationship of humans with each other.

Another failure of environmentalism revolves around the threats of "natural resource" scarcity, whether food, fossil fuel, forests, or water, and runaway population growth. Predictions of "gloom and doom" by environmental and population groups through the 1980s were largely ignored. This happened again through the 1990s with the threat of global warming and the demise of fossil fuel. It took a long time to learn that threats are not the way to change human behavior. In contrast, the Ecoshift movement believes fundamentally in positive thinking to produce positive actions and positive change.

Diversity and Respect

A culture of arrogance has led to dominance over nature and over nations and natives. Throughout world history, nature, natives, and nations have been seen as problems to be eliminated. Elimination of cultures and elimination of species have the same root. On the other hand, a culture of respect sees a parallel between evolution of species/ecosystems

and evolution of languages/cultures. In both of these latter cases diversity has intrinsic value.

Globalization erodes cultural diversity in many ways: loss of local knowledge of crafts, medicine, and skills for food and shelter; loss of local languages, dialects, and accents; and loss of local spiritual practices. Warren Wagar states that cultural differences tend to be reduced and even disappear when cultures interact. *Is this threatened loss of local culture the reason for interracial and interreligious hatred and warfare, or is the reason some perceived threat of the unknown or the different?* In any case, many indigenous peoples and nations are trying to prevent being taken over by larger, more global, cultures. Resistance ranges from tiny groups in the jungle to whole Muslim nations. But on the other hand we need globalization of concern for Earth and for all peoples. There may be value in incorporating thoughts and practices of local groups into larger cultures. Humanity has embarked on a quest to learn how to maintain the benefits of diversity within a global community.

Who are the "indigenous peoples" so frequently discussed in the Ecoshift movement? Thomas Berry's "The Dream of the Earth", Jerry Mander's "In the Absence of the Sacred", and Jim Merkel's "Radical Simplicity" all describe what we can learn from native-American (both North and South), African, and southeast Asian groups and tribes about how to live simply and lightly on Earth. "Indigenous" seems to imply separate, secretive, independent, unassimilated, or native in contrast to the currently dominant culture of their areas. Some Ecoshift writers apparently suggest a global return to the hunter-gatherer existence of many of these groups. *But I think it is very unlikely that a future "Western" society will choose to revert to an "indigenous" life-style.* What we can do is to take "lessons" from these groups, as Jim Merkel learned from the people of Kerala, India, about a cooperative mindset and reducing wants.

We affluent folks have work to do.

> "This is a time of sorrow and denial for the United States. We suffer from the considerable gap between our idealized self-image as a democratic, peace-loving nation and the reality of our history of genocide, slavery, discrimination, exploitation of working people, and imperial expansion.... To become the people and nation of our ideals, we must find the wisdom and the courage to collectively acknowledge and learn from our past transgressions and to engage in a process of national and global healing and reconciliation." - David Korten ["The Great Turning", p. 235]

Health and Job Issues

Bhopal, Chernobyl, Exxon Valdez, Love Canal, and Woburn, Massachusetts are infamous for illustrating direct effects of corporate pollution on human living space and community health. But these are only the well-known ones, the tip of an iceberg that actually has most of its problems under the water and under the radar of mass media.

"Deeper Shades of Green" by Jim Schwab describes how minorities, blue color workers, and other disadvantaged individuals and groups have begun to fight against being dumped on by corporate and political power in the United States. He points out how formation of local groups to oppose existing or proposed "dumping" creates local bonds and local community where there may have been little or none before. The down-side occurs when the issue becomes reformulated as a jobs and local economy issue; this splits communities between those who hope to gain financially via jobs, and those who expect to lose via pollution. Schwab documents how local activists from poor communities have faced corporate and government forces seeking to construct airports, incinerators, mines, hazardous waste facilities, nuclear waste dumps, coal-fired power plants, and polluting factories in their communities.

Traditional Western medicine, as practiced in the affluent world, has long failed to recognize the many adverse health effects of pollution, especially on poor communities and industrial workers. Problems of local air and water pollution, regional asthma, smog, lead, second-hand smoke, plastics like PVC, and chlorinated pesticides took many years to become recognized as problems and even more to be at least somewhat solved. As usual in ECOSHIFT lists, these are just a few of the issues that could be mentioned. Some more complicated questions at last are being studied. I just read last night about a long and intensive study of over 100,000 workers at Pratt and Whitney plants in Connecticut; workplace chemicals may have been responsible for an abnormally high incidence of brain cancer. The study seeks to determine specifically what chemicals were involved. In the United States we now recognize that compared to most affluent countries we do a terrible job of providing medical care for the poor, including victims of pollution.

The "jobs" argument gets used repeatedly to oppose pollution control and protection of endangered species and ecosystems. Schwab's activists fought this continually and he describes the deep rifts that can be created in a community by the jobs issue. Clearly changes from a profligate consumer economy to a sustainable economy are going to involve many, many job changes, but there should be plenty of new jobs available in "green" sectors. *It is important for the sustainability/Great Turning/Ecoshift movement to recognize a huge need to provide for re-education of workers. This major societal task could be paid for by cessation of present and avoidance of future wars costing hundreds of billions of dollars.* We also need to return to labor-intensive industry

where things are made carefully by hand, are expensive, and last forever. This will create many more jobs than are lost by the demise of Earth-trashing industries. Over the last century we have replaced human labor with fossil-fueled machines. *The demise of fossil fuel will be a good thing for the billions who now cannot find work for fair pay.*

The "need for jobs" argument is also used for big-box stores. Bill McKibben says in "Deep Economy" that "Wal-Mart can offer those low prices precisely *because* of the damage it does to communities (ital. au.)" [p.107]. Replacing reliable well-paid jobs in local businesses with low-paying unreliable jobs in large corporations is not an improvement.

Direct efforts to raise wages in the United States involve initially raising the minimum wage and then seeking a "Living Wage". The minimum wage was raised on July 4, 2007 to $5.85 per hour after holding at $5.15 for ten years. It will rise further to $7.25 per hour by 2009. However even this wage rate will remain well below so-called "living wage" levels. A living wage is calculated by geographical region as the income needed in that region to support a family of four at the "poverty level" defined by the U.S. government. It can be $10 to $12 an hour or more in many locations.

Efforts to raise income in poor countries revolve around "Fair Trade", which is defined as a reasonable and just return for effort. Obviously this varies considerably geographically and is more of a qualitative than a quantitative goal. The fair trade effort seeks to cut out the many "middlemen" in the long route from producer to consumer so that the producer gets a much larger portion of what the consumer pays. The fair trade concept originated with respect to coffee, which is notorious for the number of middlemen involved and the low prices received by farmers (see the Food chapter). Fair trade contrasts with "free trade", which is the effort of global corporations to do whatever they want. Fair trade has expanded to cocoa/chocolate and indigenous crafts, and has potential for expansion to other products. The Winter 2007 issue of the Co-op America Quarterly contained an article "Making Trade Fair for Africa".

Efforts to promote fair trade often are closely linked to helping people grow their own food. My wife and I have supported Sustainable Harvest International for some years and have followed its development from a beginning in the mind of founder Flo Reed, a young member of our church. SHI's annual budget of $1.3 million supports a group of extension agriculturists in several Central American countries. They help over a thousand families in 100 villages to grow food for themselves and for sale using organic and sustainable techniques instead of the usual slash and burn methods. SHI provides a wonderful example of both how to provide help to people and how the efforts of one committed person can make a big difference in the world.

In contrast, corporate globalization continues the practices of the rich both exploiting the poor and dumping environmental waste on them. "Western" culture owes its rapid development over the past several

centuries to continuous mining of poor countries for oil, minerals, wood, labor, and food. The destruction continues. We fight wars to protect our oil supply. We cut immense acreages of tropical forests for exotic woods and to make grazing land for our meat-eating. We "recycle" our plastic bags by shipping them to China where they are burned for energy without any air pollution limitations. We use manufacturing labor in places where there are little or no regulations about working conditions and wages. And most recently, our rush to biofuels (see the Energy chapter) causes conversion of agricultural and forest lands to biofuel plantations, especially in Africa, South America, and Southeast Asia. This threatens the already hard-pressed food supplies of the nations and peoples involved.

Organized opposition to all these corporate practices involving poor nations and peoples concentrates on boycotts and on shareholder resolutions. Boycotts have been organized by minorities and women, by religious and environmental organizations, by labor unions and consumer groups, and by gays and peace activists. Boycotts of California grapes over farm worker conditions, Nestle products for discourging breast-feeding in Central America, and Home Depot for lumber from tropical rainforests are all famous for creating positive changes. Coop America provides a guide to organizing boycotts at a local or national level. Coop America used to have a boycott list but now encourages letter writing to corporate heads instead. The only useful boycott list I can find is by the UK-based Ethical Consumer Research Association. Perhaps the use of boycotts is decreasing because positive actions like letter-writing and shareholder resolutions have more effect. *But I maintain that individual boycotts when multiplied by millions of people can have huge effect. Choosing what not to buy and where not to buy it perhaps is the most powerful statement that an individual can make* (see the Voluntary Simplicity chapter).

The combination of a consumer boycott with a shareholder resolution has increased power. Shareholder resolutions successfully influenced corporations doing business in South Africa and Myanmar. For more on such resolutions see the Socially-responsible Investing chapter. The Interfaith Center on Corporate Responsibility maintains a comprehensive list of shareholder resolutions, many of which concern the rights of the poor. Coop America provides more information on resolutions specifically involving sweatshops. The Alliance for Democracy urges people to join together to end corporate rule and to assert community rights over corporate rights.

Ecotourism

Affluent people from affluent countries travel a lot: Americans, Europeans, Japanese, etc. Much of this travel involves a human desire to see exotic places, exotic peoples, and exotic animals. Concern for the effects of such tourism on local peoples and local nature has created an effort to reduce adverse effects. It is called "ecotourism". There are no hard

and fast rules for what constitutes ecotourism, and like "sustainability" and "green" the term is overused and misused. Ecotourism seems to have several facets:

- "green" accommodations, from simple living to hotels that don't change the towels every day,
- efforts to minimally disturb wildlife,
- support for local crafts and other local products,
- protection of land, and
- approval of the local people for the tourist activities.

Much ecotourism occurs in poor countries of Central and South America, Africa, Southeast Asia, and Pacific Islands. In many of these areas, the local peoples have produced some income by selling exotic materials like rhino horn, alligator skin, furs, and exotic woods to the rich elsewhere. Stories of how such export harvests decimate wild animal and plant species are abundant. Ecotourism conceptually provides an alternative source of income to the local poor, so that negative impacts on the natural world are reduced.

The Wikipedia entry for "Ecotourism" describes many negative aspects of the ecotourism phenomenon. Governments promote "ecotourism" because it attracts the affluent, but without consent of the locals involved. In India and elsewhere, poor people are forced off their lands to create parks for tourists, and are forced stop collecting fuel wood and medicinal herbs. Fees for ecotourism travel still go primarily to airlines and hotels, not to the local people. Carbon emissions from ecotourism are the same as for normal tourism and other travel (see the Energy chapter). So for several reasons ecotourism is not necessarily OK. Bioregional travel provides a superior alternative (see the Bioregionalism chapter)

. The concept of ecotourism does raise important questions. What are the best ways for affluent individuals to help the poor? What kind of justice is possible when wildland desires run up against poverty needs? Who decides what is good or bad for local community? *Ecoshift will be wrestling with these issues over the next 100 years.*

Regaining Community

Indigenous peoples with low population density have created societies in which nearly everything is shared, everyone knows everyone else, and living is communal. Sharing equally is common when there is enough to go around, but gets less common as the ecological footprint of the group gets larger than the group's ecosystem can sustain. In our overpopulated, huge footprint culture, sharing is minimal, many people don't know their neighbors, and living is isolated.

We buy anything we want for tools and equipment; we have no need to share it with neighbors, so we don't. In "Bowling Alone", Robert Putnam documents declining participation in neighborhood organizations, sports leagues, town associations, and family rituals. "We don't *need* each other for anything any more (ital. au.)" says Bill McKibben in "Deep Economy". As a replacement for neighborhood community we create artificial communities connected by automobiles. I have a church community, an orienteering community, a birding community, and a running community. But these are not true local communities in which sharing of time, things, concerns, rituals, food, indeed all aspects of life, are continuous among a single group of people.

McKibben goes on to say "Living in a community comes with drawbacks; small societies can be parochial, gossip-ridden, discriminatory.... Instead of a happy mean though, we've swung to the hyper-individualism that pervades our culture." He talks about our "autistic" world, "composed, more and more, of individuals in isolation from each other, each following his or her own path." The pendulum has swung too far from living a whole lifetime in a local community to complete individual independence. Even within a modern **family** there often is little face-to-face interaction; homes are designed to keep people apart; cell phones, internet conversations, and personal headphones are ubiquitous; and grown children depart to live in distant places. Ecoshift tries to move the pendulum back toward the middle of this continuum. Change from growth to stability, from global to local, and from individualism to community are all part of the same thing.

I see four levels of human community:

1. *local communities, in which interactions involve sharing of basics, including food, clothing, housing, recreation, land, and spirituality, and linkage is primarily by walking;*
2. *interest communities, in which interactions involve a single commonality such as religion, recreation/entertainment, extended family, or sport, and linkage is primarily by fossil-fueled vehicles or by electronics (virtual communities);*
3. *regional communities, which are tribes, ethnic groups, or nations, and*
4. *global community, in which interactions recognize the commonality of all humans, and linkage involves airplanes, electronics, and global government and non-government organizations.*

Among the affluent I have already described several efforts to regain local community:

- community-supported agriculture, farmers' markets, and local foods (see the Food chapter),
- local business (see the Globalization chapter), and
- cohousing (see the Housing chapter).

Other efforts include neighborhood groups organized to fight some issue, efforts to revitalize downtowns, and even traditional block parties for communal recreation.

A pilgrim named Saoirse has invented the Freeconomy Community, an effort to promote skillshare, toolshare, spaceshare (living), and landshare (garden allotments), among people living within a 10-mile radius. The philosophy behind this expects that development of true local community can make money unnecessary. Everything becomes barter and trade. Travel is on foot or bicycle. This rapidly expanding effort has almost 7000 members in over 90 countries in November 2008, and it only started in September 2007. Numerous other local efforts exist to promote community sharing of tools and trade. Many towns, notably Ithaca NY, use alternatives to money as a transaction medium.

Community organizations arise around the world to fight pollution, to improve welfare, to resist dominance from outside, and to maintain cultural identity . The poor may be learning faster than the affluent that when people stick together they can make things happen. Whether overt or not, many of these groups follow Ghandian principles involving ecocentrism, sustainability, and economic justice:

- sarvodaya - equality - the uplifting of all including non-human beings,
- swaraj - government of self - the meeting of needs and reduction of wants, and
- swadeshi - local economy - based on manual work.

Local community is one of the key components of Ecoshift.

Liberation Theology and Ecojustice

Liberation theology arose in South America during the 1960's as an attempt to create more support for the rights of oppressed and poor peoples within the Roman Catholic Church. This controversial movement, opposed by the Catholic hierarchy as Marxist, supports and encourages the poor to stand up for their own individual and group rights. In the 1990s, just as described more generally above, the interrelationship of environmental issues and poverty were brought into liberation theology. Stephen Bede Scharper in "Redeeming the Time" sees liberation theology as a component of ecotheology (see the Ecospirituality chapter), and as "the greening of solidarity". He quotes liberation theologian Leonardo Boff,

"Two great problems will occupy human minds and hearts from now on: What is the fate and future of planet Earth if we prolong the logic of plunder to which our development and consumer model has accustomed us? What can the poor two-thirds of humankind hope for from the world?" The two questions are, of course, meant to be closely inter-related.

Other religious and political efforts to promote ecojustice are many; here I will just mention three personal examples: Greens, Unitarian-Universalists (my religious choice), and pantheists. Greens have always combined political justice and environmental issues in their 10 Key Values (see the Green Politics chapter). Unitarian-Universalist principles include the inherent worth of every person, justice, equity, and compassion in human relations, and world community with peace, liberty, and justice for all. The World Pantheist Credo (see the Ecospirituality chapter) includes "All humans are equal centers of awareness of the Universe and nature, and all deserve a life of equal dignity and mutual respect. To this end we support and work towards freedom, democracy, justice, and non-discrimination, and a world community based on peace, sustainable ways of life, full respect for human rights and an end to poverty."

The "Principles of Environmental Justice" were adopted by the First National People of Color Environmental Justice Summit at Washington DC in 1991. This list of 17 principles, each beginning "Environmental justice ...", can be found in Wikipedia under "Environmental Justice" or as an appendix in Schwab's "Deeper Shades of Green". Principle 5 in this strongly ecocentric document states: "Environmental justice affirms the fundamental right to political, economic, cultural and environmental self-determination of all peoples." Principle 16 is "Environmental justice calls for the education of present and future generations which emphasizes social and environmental issues, based on our experience and an appreciation of our diverse cultural perspectives." Other principles concern toxic waste, war, workplace health, cultural integrity, and "destructive operations of multi-national corporations."

I have not said much about effects of war. America's recent wars appear to cause more *(far more?)* civilian casualties than combatant casualties, and as in all wars, the casualties are greatest among the poor. The Viet Nam War created ecological devastation as well. Norman Myers back in 1993 wrote "Ultimate Security: The Environmental Basis of Political Stability" showing that future wars would be fought over issues of fossil fuels, water, arable land, overpopulation, and rising sea-level, and between the rich and the poor. How will the affluent world react to masses of environmental refugees, and how will the refugees themselves act?

Climate change impacts poor peoples and poor nations much more than the affluent. We saw this in great detail during and after the flooding of New Orleans, which is just a forerunner of what probably will happen in the future. Nauru, the smallest country in the United Nations, already devastated by phosphate mining, has been a leader among island nations arguing for strong carbon emission controls. If current emissions continue,

sea-level rise will severely impact many coastal cities and many island countries.

Facing the Future has curricula for teachers on the relationships among population, poverty, consumption, conflict, and environmental issues.

The Earth Charter

The Earth Charter is a set of principles to guide the future direction of humanity and Earth. This important and influential document was produced by the efforts of thousands of people in over 40 countries and is intended for adoption by the United Nations. Because the Earth Charter stands as an effective statement of the whole Great Turning/Ecoshift movement, I have chosen to include the complete Earth Charter in this book as Appendix 3.

I find it an amazing document. If only humanity were smart enough to adopt it and work to carry it out. Unfortunately, it looks as if the United Nations will not adopt it any time soon. On the good side, great efforts are being made to work on turning its various principles into practices. Paul Hawken, in "Blessed Unrest", documents thousands of efforts world-wide to address the issues of the Earth Charter. This book, ECOSHIFT, is a contribution to putting the Earth Charter Principles into practice at an individual level.

Justice versus Sustainability

There is much conflict in the "movement" about who needs to change what. In spite of the efforts documented in this chapter, some persist in seeing a divide of people versus nature. Is it realistic to dream that all 6 billion people on Earth can live in affluence? What about 10 or 12 billion? How do we define what is an acceptable living standard? Can we have both justice and sustainability? Can we have both human rights and rights of non-human species? Do or should human rights to a good life include good housing, abundant food choices, reproductive choice (as many as wanted), complete health care, free migration, well-paying jobs, and wide recreational choices?

I believe that though it is noble to campaign for high expectations for everyone, Earth ***cannot*** *support such expectations for current, let alone future, human populations, no matter what technofixes we come up with. Reproductive rights to have as many children as now desired will ruin Earth. So we must have corollary inducements/attitudes to reduce reproduction and population. The Earth Charter is unlikely to ever be realized unless there is an Earth-wide decision to reduce human populations to a billion or fewer people. This* ***can*** *be done in as few as 100 years with a norm of one-child families (see the Population chapter). The single, simplest, best way that anyone can help the poor, help other species, and help reduce humanity's adverse effect on Earth is to have NO children. Hopefully human society will soon begin to praise that choice.*

David Korten, in the "Great Turning" [p. 242] complains that "Progressive voices are often heard calling for the redistribution of existing wealth to help the poor and save the environment, but we only rarely challenge the imperial definition of prosperity. Our stories of how we would create new wealth in environmentally sustainable ways are ill-formed and rarely communicated beyond insider groups of activists." *What future human communities and economic systems will look like remains to be debated and worked out. The precise outcomes cannot be known, but major change is inevitable.*

Green Politics: Demonstrations or Elections?

"[The difference between Earth Community and Empire] is the difference between the democracy of the many championed by Jefferson and the democracy of the very rich championed by Hamilton." – David Korten ["The Great Turning" p. 345]

"Today ... support for breaking up and dispersing economic power finds expression in neither of the major parties." - Stacey Mitchell ["Big-box Swindle" p. 210]

Failure of The Two-Party System

For over two centuries, the United States has chosen politically to maintain a close balance between Hamiltonian and Jeffersonian politics, between government favoring the affluence of big business and government concerned about societal issues and the well-being of everyone. The political pendulum swings one way and then the other, but never goes all the way to either extreme. Now the ecosystem services that have allowed a long-term balance to exist are running out. We no longer have the option of the Hamiltonian viewpoint, which offers everyone the American dream of getting rich. The requirements for deep change are becoming more and more obvious.

Yet, the two major political parties of the United States and the politicians that run them are very unresponsive to necessary change. Over the past thirty years, the pendulum has swung only between maintenance of a kind of middle *status quo* and changing it to benefit the wealthy. The pendulum swung away from social concerns and toward the dream of affluence with the Reagan administration in the 1980's and remained there for almost thirty years. Certainly no liberals or progressives can look back on this time with good feelings. These decades have brought about the house of cards described in the Where Are We Now chapter, and the dominance of corporate empire discussed in the Globalization chapter. In

the election of 2008 Americans finally chose to move the pendulum in the Jeffersonian direction. It remains to be seen how far this swing will go.

The past thirty years have seen the co-opting of the Democratic Party by corporate empire. We have heard much about the power of lobbying, political action committees, and political contributions. In spite of some mild efforts to control the power of money in politics, the huge costs of political campaigns at the national level create situations where the biggest bucks nearly always win. Paul Hawken points out, in "Blessed Unrest" that addressing local problems of many kinds is futile unless we address climate change, which is futile unless we address political corruption, which is futile unless we address campaign finance. Kevin Phillips writes on similar subjects in "Arrogant Capital".

The Democrats, once the party of labor, minorities, and yes, even environmentalists, has tried to win votes by being centrist, by not rocking the American boat, and by spending corporate dollars. Progressives, who want social change rather than corporate control, have been left out of the election process. Until 2008 the most progressive Democratic candidates always seem to lose early in the primaries, leaving the party with a candidate who promises that America is good and getting better. After the 2000 election, Jim Hightower wrote "If the Gods Had Meant Us to Vote They Would Have Given Us Candidates.", expanding on the similarities of Democrats and Republicans. *I believe that Mondale, Dukakis, Gore, and Kerry lost because they could not coherently express a new vision for America and because they tried hard not to aggravate any voters.*

I became disenchanted with the Democrats in the eight years that Al Gore was Vice President. After publishing "Earth in the Balance" in 1992, he then ignored everything he said once he was Vice President. The climate change issue was never really on the table in the Clinton years, and Gore further avoided it when he ran for President in 2000. In his last DAYS in office, Bill Clinton tried to salvage his lackluster environmental record by establishing a number of executive branch regulations, which President Bush then immediately rescinded. Unfortunately Clinton did not establish these rules at the beginning of his eight years or they would have become standard practice. The environmental retrogression of the Clinton and Bush administrations and the coziness of politicians of both parties with big business have been castigated by Jeffrey St. Clair in "Been Brown So Long It Looked Like Green to Me".

In the past eight years, the administration of George W. Bush and a generally Republican Congress did nothing about the issues involved in Ecoshift. In fact they rescinded much of the progress made over the past four decades. The Natural Resources Defense Council listed Bush's anti-environmental actions from 2001 through 2005, then gave up, *perhaps in despair*. Democrats in Congress and the candidacy of John Kerry failed to raise a strong minority voice of protest either to environmental issues or to the so-called war on terrorism.

Over the past 30 years both parties have proclaimed America as the number one nation in the world, as the country to be emulated by others, and as the only nation whose wishes should not be denied. Yet here is a list of Ecoshift-related international treaties that have been adopted by most of the nations of the world, but have been effectively ignored by the United States:

- 1977 International Covenant on Economic, Social, and Cultural Rights - not ratified
- 1979 UN Convention on Elimination of All Forms of Discrimination Against Women - not ratified
- 1982 UN Convention on the Law of the Sea - not ratified
- 1989 UN Convention on the Rights of the Child - not ratified
- 1989 Optional Protocol to the UN Covenant on Civil and Political Rights banning death penalty for those under 18
- 1992-2001 UN General Assembly resolution calling for US to end its Cuba embargo
- 1997 UN Framework Convention on Climate Control (Kyoto) - not ratified
- 1998 International Criminal Court Treaty
- 2001 UN Human Rights Commission - US not re-elected after failing to pay its U.N. dues
- 2001 International Plan for Cleaner Energy
- 2002 International Treaty on Plant Genetic Resources for Food and Agriculture - not ratified
- 2003 WHO Framework Convention on Tobacco Control - not ratified

I developed this list from other lists by Richard DuBoff on the Center for Global Research web site, by The Global Policy Forum, and from Wikipedia's "List of treaties". In some cases, the administration took credit for signing the treaty or agreement, but as indicated it was never ratified by the U.S. Senate. Patricia Jurewicz on the Environmentalists Against War web site provides a more detailed discussion of the treaties ignored or withdrawn from during the administration of George W. Bush. In documenting a decades-long trend of U.S. failure to support the United Nations, she writes: "The chief argument for the lack of US participation in the multilateral treaty system, according to many analysts, is a fundamental reluctance to surrender US sovereignty to any other authority." *We are a world leader no longer. We are a world dragger, an outcast. When will we get a political party that sees the rest of the world as equals and denies the social Darwinism inherent in claiming that America is Number One.*

Throughout the dark period of the past two decades, Congressman Dennis Kucinich has stood out as a progressive reformer. He talks about

the Earth Charter, about low wages and globalization, about energy issues and global warming, about simple living, about ecosystems and diversity. Yet he goes nowhere in the primaries because he is reputed to be a "flake" who has said "we are descended from stardust", even though that is a major point of the New Story of science (see the Universe Story chapter).

Finally in 2006, the electorate woke up to the fact that the invasion of Iraq was the biggest U.S. blunder since Viet Nam. In "The Great Turning", David Korten points out that terrorism is a reaction to the forces of Empire trying to impose their will on "subject" people. It is a negative reaction to corporate globalization and to "Western" values, such as marginalization of the poor, sexual provocativeness, and greed for oil and other "natural resources".

Progressives have regained hope with the election of Barack Obama as the next American president and a Congress controlled by the Democrats. Is there now a new breed of Democrats who will return the party to its 1960s principles? *Personally I, who have called myself a Green for several years, remain to be convinced that Democratic leadership is interested in or capable of changing the current rule of global corporate empire.*

The Green Party

Throughout American history third parties have fared poorly. They played a role only in a few cases where a party formed around a charismatic leader. Still, the progressive gap left by the centrist Democrats has spawned several wannabees.

Perhaps the first "environmental" third party was the Citizens Party formed by Barry Commoner, author of "The Closing Circle", for his presidential run in 1980. The party attempted to unite environmental groups who felt that the Carter administration was not doing enough. Commoner received over 200,000 votes, and the Citizens Party became the first "third" party to qualify for federal funding in 1984. Although the Party ran candidates for various offices and nominated Sonia Johnson for president in 1984, it lasted only through the 1986 elections.

Wikipedia documents the rise and fall of The New Party, whose web site now refers to the Working Families Party of New York. New Party issues involved labor unions, affordable housing, a living wage, and "electoral fusion". In electoral fusion, two or more political parties nominate the same candidate in order to increase their vote-getting power. Most states prohibit electoral fusion and in 1997 the U.S. Supreme Court supported such prohibition by a 6-3 vote in spite of First Amendment arguments. This vote dealt a serious blow to any chance for a multi-party system in the U.S. and effectively ended the New Party.

By far the longest lived "green" party in the United States and elsewhere is the Green Party! Environmental political parties were founded in various countries around the world in response to rising

concerns fostered by the 1960s fervor for change and the first Earth Day in 1970. The name "Green Party" was first used in the 1980 German elections. The Greens are now a world-wide movement. The Four Pillars of the movement evolved as ecological wisdom, social justice, grassroots democracy, and nonviolence. In 1984 the movement in the U.S. added six more to create Ten Key Values. Each local Green Party organization is free to restate these values in its own way. Here is a brief version used by the Green Party of New Jersey. It is interesting to compare this list with the Earth Charter; they cover the same ground (see Appendix 3).

Ten Key Values of the Green Party

1. "Ecological Wisdom – The Earth sustains all life forms. Whatever we do to the web of life we do to ourselves.
2. Social Justice – Greens find the worldwide growth of poverty and injustice unacceptable and are working for a world in which all can fulfill their potential regardless of gender, race, citizenship, or sexual preference.
3. Grassroots Democracy – The powerless suffer the most from resource exhaustion and toxic pollution. Greens believe in direct participation by all citizens in the environmental, political, and economic decisions that affect their lives.
4. Nonviolence – Greens reject violence as a way of resolving disputes. It is shortsighted, morally wrong, and ultimately self-defeating. We advocate demilitarization and abhor state-organized killing of any kind; therefore we are against the death penalty and we work to end war forever.
5. Decentralization – Power and responsibility must be restored to local communities, within an overall framework of ecologically sound, socially just values and lifestyles. To counter the alienation of mass industrial society, we work toward the restoration of humanly-scaled communities, institutions, and technologies. We view political decentralization as a prerequisite for substantive participatory democracy.
6. Community Economics – Greens seek the deconcentration of wealth and power; we assert that extreme disparities in personal wealth and concentrated control of productive assets are inherently undemocratic. Therefore we advocate a new economics which first and foremost assures that the basic needs of everyone on the planet are met (sufficiency) – while taking account of the natural limits of the Earth. We advocate decentralization in

the economic sphere as well as the political sphere; this would mean regionalizing economic activity as much as practical to foster local self-reliance and accountability.

7. Feminism – The ethics of cooperation and understanding must replace the values of domination and control. Gender should not be a basis for discrimination nor for role typecasting.
8. Respect for Diversity – We honor the biological diversity of the Earth, and the cultural, sexual, and spiritual diversity of Earth's people. We aim to reclaim this country's finest ideals: popular democracy, the dignity of the individual, and liberty and justice for all.
9. Personal and Global Responsibility – Greens express commitment to global sustainability and international justice both through political solidarity and personal lifestyles based on sufficiency and living lightly upon the Earth.
10. Future Focus/Sustainability – Like the Iroquois Indians, Greens seek a society where the interests of the seventh future generation are considered equal to the interests of the present. Every generation should, minimally, seek to leave the planet no worse off than when it was bequeathed to them. We must act in the present in such a way as to reclaim the future for our children and their children."

The Green movement in the United States and elsewhere has been plagued by a fundamental disagreement about whether to work for legislative power through winning elections or to work for change through social activism that alters personal attitudes. Eckersley's "Environmentalism and Political Theory" discusses the impact of environmentalism on political thinking, especially with respect to Green politics.

The third key value, "Grassroots Democracy", expresses a fundamental about Green politics that is both positive and negative, because decisions on purposes and types of action are made by Greens at local and state levels, not at the national level. Consequently, a serious split took place in 1992 when state groups whose primary focus was on winning elections formed the Green Party of the United States (GPUS), leaving the older Greens/Green Party USA (G/GPUSA) to the social activists. The continual controversy involving personalities, power, and efforts to re-merge has been documented by Synthesis/Regeneration: A Magazine of Green Social Thought, and by Wikipedia under "Green Party". GPUS is an association of state green parties and has no individual memberships, though you can be a "supporter". Opponents

claim that it has no "democracy" and that delegates to its national convention are not selected proportionally to state party membership. G/GPUSA is an individual membership organization, with decisions made by member votes, preferably by consensus. The continual green in-fighting about a right way to do things has cost the movement many supporters and shows no signs of ending.

In addition to the fundamental split, Greens are also torn by major differences of opinion about electoral politics. Is it better to run the strongest candidate possible regardless of the two major parties, or is it better to avoid campaigns where the two major parties have a close contest in order to help the Democrats to win?

In 2000 Greens nationwide, disgusted with the non-existent environmental record of the Clinton-Gore administration, became aroused by Ralph Nader's decision to campaign as a Green. In my home state of New Hampshire, I and many other Greens worked hard and successfully to get Ralph Nader on the state ballot. (After the election the state Green Party could not handle a big influx of interest and was split by the usual rift between elections and social protest; it disintegrated quickly.) The election result made history, with Nader winning far more votes in New Hampshire than the difference between second-place Gore and first-place Bush. The same thing happened in Florida and everyone knows what the Supreme Court decided. Jim Hightower, in "If the Gods Had Meant Us to Vote They Would Have Given Us Candidates" points out that in Florida in 2000, 24,000 Democrats voted for Nader and 308,000 Democrats voted for Bush! *Clearly it was Gore's inept candidacy and Clinton's inept personal affairs that cost Gore the election, not the candidacy of Ralph Nader and the Greens.*

In the 2004 presidential election, the "Anybody but Bush" movement translated into "Vote for Kerry" which caused great schisms among real progressives. Once again the Democratic nomination process produced a candidate with few strong convictions, a follower of the whims of the middle of the road rather than a leader. And once again millions of eligible voters chose not to bother to vote, in spite of the Iraq war issue. Many Greens decided to stick with the Democratic candidate to avoid a repetition of 2000. Ralph Nader chose to run as an independent rather than as a Green, so after more major internal conflict about the nomination process, a component of the Greens put up its own ticket of Cobb and LaMarche. Cobb refused to campaign anyplace where the Kerry-Bush battle was close. Progressives were torn three ways, and the Green Party was once again torn apart. Howie Hawkins documents the continuing conflict in "Independent Politics: The Green Party Strategy Debate".

In 2008 GPUS nominated former U.S. Representative Cynthia McKinney, who with running mate Rosa Clemente, received 154,000 votes nationwide. In Arkansas, Green candidates received 20% of the vote in races for the U.S. Senate and House in which one of the major parties did

not bother to field a candidate. As usual Greens were elected to a number of local offices in various states.

Green infighting is not unique to the United States. In Germany, Greens have achieved their biggest electoral successes. The Greens were included in the coalition government from 1998 to 2005. For political reasons, Green members of Parliament supported the government decision to aid the United States in Afghanistan, earning intense criticism by Greens worldwide for non-adherence to the Green value of non-violence and pacifism. Such internal strife has cost Green seats in parliaments of European Union countries. The national Green Party of Canada has been beset by conflict over top-down versus bottom-up organizational structure, and remains fairly weak with respect to the provincial parties. *No doubt the history of every local or national green party is replete with controversy. It is sad to think of the energy spent and the supporters lost because of internal disagreements. Just as with the larger Ecoshift movement, supporters need to realize that all roads need to be followed to reach the lofty goals of the Green Key Values and the Earth Charter. No one way is the best or the only possible way.*

Greens and other progressives, and perhaps other third parties like Libertarians, would like to have "Independent Runoff Voting" , which is an election system that allows each voter to rank candidates as first, second, third, etc. choices. First place votes for the lowest vote-getter are redistributed to those voters' second choices; then this process of dropping the last-place candidate is repeated until one candidate receives over 50%. Such a scheme has been adopted for local elections by a number of U.S. cities, including San Francisco, but seems very unlikely to happen at the national level given the power of the major parties to kill off third parties. Alternatively, the Green Party favors proportional representation, in which parties gain legislative seats in proportion to the number of votes they receive; this method of allowing for multiple parties is common elsewhere in the world. *Hope for a progressive political movement may require frustrated liberal and progressive Democrats to join with Greens and others to form a new unified national party. Such a party would probably require a new charismatic leader.*

David Orton has proposed ecocentrism as the fundamental core of a revised/revived Green Party. In "The Ecocentric Left and Green Electoralism" [Synthesis/Regeneration, Winter 2005] he writes:

> "Leading the move from a human-centered to an ecocentric consciousness is fundamental. We need to place the welfare of the Earth and all its life forms first. 'Community' has to include not just humans, but other animals, plants and the Earth itself.... There is not only a liberal democracy, with all its limitations for deeper Greens, but there is also an ecocentric democracy and governance. Ecocentric justice is much more inclusive than human justice. A Green Party has to decide about all this, not just how to run its affairs democratically from a human-centered perspective."

Unfortunately, as long as the nation persists in its nearly 50-50 split between the two major parties, it seems highly unlikely that any third party can develop. *Although it is long past time to put a stop to the political rush to the lowest common denominator and for candidates to take strong positions and exert leadership*, we probably will have to wait for Earth itself to issue the wake-up call by running out of oil or an abrupt climate change. It is, at least, hopeful that the green movement stays alive in spite of its internal problems. The goals of the Ten Key Values remain attractive; the controversies arise in how to achieve them.

Political Activism

Given the difficulties inherent in Green politics, many Greens concentrate on other forms of political activism, such as demonstrations, environmental actions, letter-writing, educational efforts, and cooperation with other groups. The national G/GPUSA and various state and local Green groups support protest marches, sidewalk demonstrations, and vigils. Through the administration of George W. Bush such protests focused on opposition to war.

On October 26, 2002, at least 100,000 Americans, including me, marched in Washington DC in opposition to the proposed war on Iraq (though the police and newspapers claimed it was only 30,000). This march, and many others since, was organized by Act Now to Stop War and End Racism (A.N.S.W.E.R.). More anti-war protests were organized by Move On. The peace movement, too, suffers from conflict among organizing groups such as these two over differences of opinion on how radical to be and what interest groups to include.

Against the War

A good friend of mine was killed in United flight 175 on September 11, 2001. His widow has worked tirelessly **against** war ever since. In 2002, I **knew** we were getting into another quagmire like Viet Nam, and I still cannot understand how the top people in government did not recognize that? I carried a poster at the October march that showed "War" and "Terrorism" linked together by two arrows forming a circle. The terrorism engendered by that brief war and the consequent long American occupation has destroyed Iraq and many thousands of its people. When will we stop trying to impose our domineering opinions on cultures that we do not understand?

Most demonstrators at that 2002 protest linked Bush's proposed invasion to the insatiable U.S. need for oil to fuel its global house of cards. Protest posters read "No More Blood for Oil", "Drive Vegetarian", "Funds for Schools, Not Weapons", "Money for Health, Housing, Education; Not War", "Greens Against War", and many others that link the war to Ecoshift issues such globalization, ecojustice, and alternative energy.

Protests and demonstrations about other issues have taken a back seat to war lately, but they range from opposing the Free Trade Agreement of the Americas (FTAA), to local demonstrations about big box stores, and to environmental pollution as discussed in the Ecojustice chapter. Such protests have a history of success, going back to the demonstrations that ended the construction of nuclear power plants. *I believe in the necessity of radical action. Some activists need to take an extreme position in order to move society a little way in a certain direction. Someone has to be way out there yelling for change or change will not happen; I call this the "Rachel Carson syndrome".*

Clearly there are millions of people who consider themselves "green" in thought and outlook, but who do not support green electoral politics or attend demonstrations and protests. Bumper stickers are a alternative way to make your politics public. The Peace Resource Project has lots of choices including "Equal Rights for All Species" and "Consume Less, Share More". Another powerful way to be heard involves writing to your state and federal legislators. Each letter effectively represents hundreds, or even thousands, of constituents. Hand-written letters get the best response; legislators are so overwhelmed by e-mail and e-mail petitions that they ignore them. Writing to all those new Democrats in government should be especially effective. Then there is getting active in one of the thousands of organizations that are trying to educate about green issues and green thinking, many of them mentioned in this book. Ecoshift is all about making change from the bottom up, rather than waiting in vain for politicians to show leadership from the top. Such work has created a ground swell of support for The Great Turning toward a sustainable Earth.

The Great Turning: Into the Future

"Managers and executives in large corporations, from GE to Wal-Mart, understand issues concerning the environment in a way that would have been radical in the nonprofit world not even ten years ago. Essentially, the nonprofit and social entrepreneurship sector is a source of memes that are moving into the governmental and for-profit world." – Paul Hawken ["Blessed Unrest" p. 152]

"There are two worldviews that represent opposing forces in the world. One is the worldview of interconnectedness, of understanding that all life is sacred, that all people and nature are interconnected; wealth is shared, actions are love-based and creative, nonviolence is the path towards peace, and survival depends on partnership with others and with nature. The other worldview is one of separation: life is separated into them and us, good and evil, with survival depending on competition and domination over other people and over nature. Capitalism has perpetuated the worldview of separation. Capitalism teaches individualism and competition, leads us to think our self-worth is based on material wealth, and gives us the false feeling that only money, rather than community, brings security; thus, we live in fear that we don't have enough for ourselves or that what we have is going to be taken away." – Judy Wicks ["The Local Living Economy", Resurgence, March 2006, p. 35]

Joanna Macy apparently coined the term "The Great Turning" in the 1990s. She describes it as three layered: holding actions in defense of Earth, creation of sustainability, and a paradigm shift of values toward deep ecology and ecocentrism. David Korten used her term as the title for his recent book "The Great Turning: From Empire to Earth Community",

though it says little about many facets of Ecocentrism described in ECOSHIFT.

President Jimmy Carter once said (presumably when he was President), "In a nation that was proud of hard work, strong families, close-knit communities, and our faith in God, too many of us now tend to worship self-indulgence and consumption. Human identity is no longer defined by what one does but by what one owns. But we've discovered that owning things and consuming things does not satisfy our longing for meaning. We've learned that piling up material goods cannot fill the emptiness of lives which have no confidence or purpose." Statements like this perhaps initiated the Great Turning away from consumption and materialism and toward community and respect.

David Korten and Paul Hawken have been very influential voices about the economics involved in creating the need for and resulting from The Great Turning. Korten's 2000 lecture to the Schumacher Society, "Creating a Post-Corporate World", is a fine overview of the subjects of ECOSHIFT. In his various writings he has a lot to say about what a fair market economy and Earth community would look like. In "Blessed Unrest", Paul Hawken describes a huge range of culture-changing organizations in terms of types of groups: Keepers, Watchers, Friends, Defenders, Coalitions, Alliances, Networks, Street Performers, Culture Jammers, and Real Billionaires. His million groups are illustrated in Hays' "Wars in the Woods" with regard to forest practices, in Mitchell's "Big Box Swindle" for opposition to chain stores and support for local businesses, and in Schwab's "Deeper Shades of Green" for local anti-pollution groups. Magazines that cover the Great Turning and the many groups involved in it include Resurgence, The Utne Reader, E: the Environmental Magazine, YES! A Journal of Positive Futures, and Orion Magazine. *Resurgence provides fine, in depth articles by many of the movement's well-known names. It is my favorite though it is published in Great Britain and thus has a British rather than an American slant.* (I would also like to recognize here a number of fine Ecoshift magazines that have ceased publication: Timeline, Earth Light, Earth Ethics, Wild Earth, Whole Earth, and Natural New England.)

Other writings about The Great Turning include "Eco-Economy: Building an Economy for the Earth" by Lester Brown, who says: "An eco-economy will affect every facet of our lives. It will alter how we light our homes, what we eat, where we live, how we use our leisure time, and how many children we have. It will give us a world where we are part of nature, instead of estranged from it". The booklet "Global Consciousness Change: Indicators of an Emerging Paradigm", by Duane Elgin and Coleen LeDrew, includes suggestions for starting a study circle.

I'm not sure why so much more of The Great Turning seems to happen on the West Coast than on the East Coast, but the BIG annual event is the Bioneers Conference in California. Finally in October 2008, the first Northern New England Bioneers Conference was held near me in

Portland Maine. (Too bad I only heard about it when it was already happening.)

Certain companies in the corporate world have led the way into the future. One of them is Tom's of Maine, makers of toothpaste and similar items. For a time, every package of toothpaste produced by Tom's included Jane Goodall's "Four Rays of Hope". Goodall said "As we move toward the millennium it is easy to be overwhelmed by feelings of hopelessness…. Yet I do have hope." and she gives four reasons:

1. "We have at last begun to admit to the problems that threaten the survival of life on earth. And we are problem-solving creatures….
2. [N]ature is amazingly resilient….
3. [Y]oung people around the world [have] tremendous energy, enthusiasm, and commitment….
4. [The] human spirit [is] indomitable….

So let us move into the next millennium with hope…. Let us develop respect for all living things. Let us try to replace violence and intolerance with understanding and compassion. And love."

Extremes of Worldview

The Great Turning involves fundamental changes in attitudes and beliefs. It involves shifting both individual and societal worldviews from valuing the qualities on the left to valuing the qualities on the right side of the following table.

anthropocentric	ecocentric
reductionist worldview	holistic worldview
arrogance	respect
growth	sustainability
competition	cooperation
monoculture	diversity
wasteful	frugal

money	well-being
power	equality
global	local
dominator paradigm	Gaian paradigm
empire	Earth community
takers	leavers

Although stated as dichotomies, these pairs of terms should really be seen as a continua; most of these continua are discussed elsewhere in ECOSHIFT.

However, these continua may be double-peaked, with most individuals positioning themselves closer to one end or to the other. I believe this extremist tendency arises from a true dichotomy between fundamental beliefs:

A. *Humanity, the highest life form on Earth and in the Universe, is the culmination of Creation. Earth and the Universe are uniquely designed to support humanity.*
B. *There are many and ever-changing life forms on Earth and in the Universe. All species, including humans, are evolving into something else.*

Daniel Quinn, or the gorilla "Ishmael" who speaks for him, shows how these opposing beliefs differentiate between Takers and Leavers. Takers attempt to obtain everything that they want and take it now; Leavers satisfy themselves with what they really need and leave the rest for future generations.

Competition or Cooperation

In YES magazine, [Summer 2006], David Korten described the three stories of empire, which are the myths used to support the value system on the left side of the table above. (Here and in the Universe Story chapter a "myth" is defined as an interpretation of beliefs, a story that explains phenomena, regardless of whether or not the beliefs are true or the phenomena are real.) The imperial prosperity story tells that a growing economy benefits everyone, that we need wealthy people to invest in

growth so we should cut their taxes and eliminate regulations, and that welfare should be eliminated so the poor will learn the value of work. The imperial security story tells that there are lots of bad people and bad governments so we need strong police and military to ensure our safety. The imperial meaning story tells that God rewards righteousness by wealth and power and that the poor justly suffer for their sins. These stories are supported by major governments, major media, and major corporations with all their legal, financial, and political power.

There is little disagreement among proponents of The Great Turning that these stories need to be replaced, but there is disagreement about how to do it and what to replace them with. At times this has led to competition and rancor, such as the conflict between deep ecologists and ecofeminists in the 1990s (see the Ecofeminism chapter). Other areas of controversy include the relationship between competition and cooperation, and the question of which countries need to reduce consumption first and by how much. I use these here as examples, but it is fair to say that almost everything in this book is controversial in one way or another.

Proponents of The Great Turning frequently emphasize that we must turn away from the intense competition inherent in social Darwinism and replace it with a spirit of cooperation. Because ecoshifters respect the natural world, we like to use it as an example of how humans could do things better. In "The Great Turning" [p. 275], David Korten says "How long would the forest ecosystem survive and prosper if the individual organisms lived by the neoliberal economic principle of unfettered competition for short-term individual advantage?", and elsewhere, "The organizing principle of life is partnership, not domination." *He is far from alone in over-romanticizing the cooperative aspects of natural communities in an effort to downplay the competitive aspects.* Ecologists, however, know that while organisms always exist within a community of life, they must struggle to do so in the face of competition. If nature were such a friendly place, organisms would not have to produce thousands to millions of offspring in order to pass on their genes; for most species, most offspring are killed before maturity by members of their own species, by predation from other species, and by competition for food and energy. Cooperation, whether in parenting by eider ducks, or in symbiosis between alga and fungus in lichens, develops when it helps a species to grow and reproduce itself. Elisabet Sahtouris says "One can discern in evolution a repeating pattern in which aggressive competition leads to the threat of extinction, which is then avoided by the formation of cooperative alliances." Nature is not a community of cooperation, but it is a community of interdependence. Both cooperation and competition are inherent components of Creation. We need not apply human ethics to judge either as good or bad. *The difficulty is not with competition, per se, for instance in sports, but with its tendency in humans to lead to disrespect.* Competition has been fundamental to continuing creation on Earth; but only humans have turned it into arrogance.

Competitive arrogance leads nations into opposing efforts to change. The Kyoto protocol failed to substantially reduce carbon emissions because the United States and several other large countries were unwilling to reduce their energy consumption. The argument continues over who should "go first", and how much. Should all nations reduce at the same rate, say 3% per year? Or should large nations reduce at a faster rate than small nations? Or should developing nations stop making things worse by trying to reach American levels? Or should the most affluent nations make large reductions while the least affluent increase in order to reach global per capita equity. No scenario has been proposed on which all nations can agree. Consequently there is not much progress. *I say it's time for the United States to show some leadership qualities instead of its usual chauvinism about maintaining our way of life.*

The Happy Planet Index

The Happy Planet Index (HPI) is an index of human well-being and environmental impact, introduced by the New Economics Foundation in July 2006. The HPI was developed as a substitute for the Gross Domestic Product (GDP), which empire uses as the measure of a nation's well-being. The GDP counts as positive buying cigarettes and getting lung cancer, all the other medical costs for an unhealthy population, legal costs for an unhappy population, and costs of storing spent nuclear fuel, cleaning up oil spills, and hauling trash to landfills. In contrast, the HPI does not use economics. but instead involves the ratio of life satisfaction or happiness to environmental impact. It measures the happiness of nations and the planet rather than the turnover rate of money.

$$\mathrm{HPI} = \frac{\beta \times \mathrm{Life\,Satisfaction} \times \mathrm{Life\,Expectancy}}{\alpha \times \mathrm{Ecological\,Footprint}}$$

Conceptually, the HPI is straight forward and intuitive. Life expectancy at birth and the per capita ecological footprint (see the Sustainability chapter) can be calculated with reasonable accuracy. Life satisfaction is evaluated by polling questionnaires such as the one for individuals on the HPI web site. Life Satisfaction is multiplied by Life Expectancy to give a higher value for the same satisfaction over a longer life span. Dividing by the Ecological Footprint makes the HPI go down as the footprint goes up. The constants α and β are described in the initial HPI global report (available as a PDF download). The β multiplier simply sets the optimum value at roughly 100. The α constant ensures that an approach to zero footprint does not lead to an infinite HPI. My personal HPI from the on-line questionnaire came out as 63, a fair bit lower than the 84 optimum but way above the average American value of 29.

The Wikipedia entry "Happy Planet Index" shows a world map and an ordered list of HPI by countries. Central American and Caribbean

countries dominate the top ten. European countries are led by Austria at 61st. Columbia, Cuba, and Viet Nam are near the top of list, but the United States is 150 out of 178, *which is not something to be proud of.* Clearly a nation does not have to have a high footprint to be happy. Although the HPI is controversial with respect to data inputs and calculations, it has rapidly become widely discussed. Google returns over 50,000 entries for a concept less than two years old.

In spite of conflict and debate, the pace of The Great Turning toward sustainability within Earth's support systems increases rapidly. The remainder of ECOSHIFT describes the various spiritual beliefs that underlie turning to an ecocentric worldview.

PART 4 – CHANGING HUMAN SPIRITUALITY

Ecopsychology: Human Need for Nature

"We cannot have well humans on a sick planet. We cannot have a viable human economy by devastating the Earth's economy. We cannot survive if the conditions of life itself are not protected. Not only our physical being, but our souls, our minds, imagination and emotions depend on our immediate experience of the natural world." – Thomas Berry

The Lure of Nature

Humans need nature in a deeply fundamental way. Every weekend highways fill with automobiles driving hundreds of miles to the mountains, to the seashore, to lakes, rivers, desert, and forest. We build "vacation homes" in such surroundings. Scenery, birds, charismatic megafauna from bears to whales, hunting and fishing, fall foliage, and diverse forms of outdoor recreation all attract masses of humanity. Houses have windows, the bigger the better, to look out at trees, flowers, streams, sky, and, if you have enough money, on mountains, lakes, and oceans. Bigger house lots are better, in order to have larger yards, gardens, and private woods and fields. For a "real vacation" we travel as far as we can afford to the most exotic scenery and megafauna we can find, somehow hoping that it will make an improvement in our lives.

Why do humans have these needs? The young field of ecopsychology argues that humans have evolved over millennia in intimate relationship with the other-than-human or natural world. So psychologically we need a close relationship with nature for our mental health. This need drives people to own land and build houses with big windows, and drives people to drive. Clearly there is a strong urge to get away from urban living, from surroundings that are totally controlled by humanity, from cities and suburbia. Even within huge urban agglomerations, which are our most anthropogenic environments, we try to create parks and to plant trees and flowers. If not for the need for nature, why does it ease our minds to have trees in the city?

If we can't afford or find the time and energy to go into nature, then we watch nature programs on TV. From Jacques Cousteau in the old days to the late, lamented Steve "Crocodile Hunter" Irwin, on the Discovery Channel or Animal Planet or Nova, and lately at the movies in "Winged Migration" and "March of the Penguins", nature has a hold on people; we want to see animals and plants in their natural environments.

In "Voice of the Earth", Theodore Roszak argues that the human ego needs a "perfect environment" that is not just social but natural. He says that the planetary biosphere is everyone's primary caregiver and "estrangement from Gaia [is] the primary underlying neurosis of our time." Children begin life with a "warm and trusting connection to the Earth", and only later learn to disconnect from the wild. Even in the various outdoor activities listed above, we keep ourselves separate from rather than intimate with nature. Reconnecting the human soul with the natural and wild world forms the core purpose of ecopsychology.

Tree Hugging

My "escape" from the human world of office, house maintenance, parenting, chores, and volunteer committees has always been to get out in the "woods" by myself. Birding, hiking, backpacking, cross-country skiing, sailing, and trail running all provide me with rest and recovery from the efforts of life, especially when I do them solo. In recent years I've become a bit more meditational about it, hugging a favorite tree or talking with chickadees. My mind and body get energized, and my spirit gets renewed.

Fear and Disconnection

Clearly I have a hard time understanding why many people are afraid to go into the natural world. But I once had a friend who, after a short walk on a trail near my house, thanked me for helping to overcome

the fear that had prevented him from ever going into the woods before. How many people disconnect from nature because of fear of ticks, poison ivy, black flies, mosquito-borne disease, bears, or even rain? Perceived danger to humans and/or their domestic animals created several thousand years of killing of wolves, mountain lions, coyotes, tigers, lions, and bears. Over the past fifty years, Americans have become afraid to let children play outdoors unsupervised; there are wild animals, poison oak, broken arms, sexual predators, Giardia, drowning, traffic, Lyme disease and getting lost to worry about.

So we try to remove these fears by looking at nature from the outside rather than being in it. We look at it through windows from our houses and our cars. We keep roofs over our heads and walls around us to avoid sun, wind, rain, animals, disease, and strangers. We drive to the mountains to look at fall foliage and never get out of the car. Or we walk only paved tourist paths for short distances from the parking lot. Or to be really safe, we stay at home and watch virtual nature on television.

In "Last Child in the Woods", Richard Louv points out that much of this fear is generated by over-hyped wrong statistics and by the news media. For instance, there is a much greater chance of injury to children in organized sports than in nature-based activity. This is part of a much larger problem that our society has with risk assessment. We manage to accept over 40,000 deaths from automobile accidents each year, but one runner killed by a mountain lion receives national publicity and public outcry. Humanity has always accepted high risks of injury and death from human causes like transportation, malnutrition, and war. But we accept no risk at all from "natural" causes.

Minimizing Risk

I do not mean to minimize or disavow the risks that do exist in interactions with nature. But there are relatively simple ways to minimize these risks. I use DEET when necessary; I check my clothes and body for ticks when necessary; I know, understand, and even love poison ivy (it's a beautiful plant); and I carry a map and know where I am and where I am going. While running on roads near my suburban home, I've been asked by tourists about the threat of bears. I respond by saying that yes, we do have bears around here and sometimes I see them while I'm running. But I treat them with respect; if I don't bother them, they won't bother me. I know their rules: "don't get between me and my food, and don't get between me and my children". I have followed both bear and moose along a trail, slowly, and respectfully asked (prayed?) to them to get off the trail This year a couple of bears didn't, so I

turned around! I don't try to get as close as I can to a bear or a moose in order to take its picture and I certainly don't feed them! A healthy fear is good when coupled with respect.

Quite another aspect of fear and disconnect arises from recreational outdoor sports. Many such activities involve a desire to "conquer" the wild, whether mountains, rivers, or oceans. For some reason they also seem to require expensive, sophisticated equipment. I'm thinking here of mountain biking, downhill and back-country skiing, snowboarding, rock climbing, kayaking, hang gliding, sailing, motorboating, jet-skiing, and adventure racing. In some respects, these may be replacements for hunting and fishing, but even though hunting and fishing have an aspect of conquering nature via wildlife, they have also been motivated by need for food and by a close connection to the wild, as described by Aldo Leopold in "Sand County Almanac". What is common to all the other activities is not only the equipment mania, but also the adrenaline rush that comes with the "conquering". Apparently some aspect of fear is involved. *I am not confident that such forms of outdoor recreation can produce an ecocentric worldview with its respect for the wild, for the Earth, and for all its beings.*

Nature Deficit Disorder

Theodore Roszak first used the term "ecopsychology" in "The Voice of the Earth: An Exploration of Ecopsychology" in 1992. Ecopsychology encompasses both human fears of and disconnect from the wild and the fundamental human need for nature. Roszak connects mental health with many of the other topics in ECOSHIFT such as Gaia, ecofeminism, the Universe Story, and deep ecology. The follow up anthology "Ecopsychology: Restoring the Earth, Healing the Mind", edited by Roszak, Gomes, and Kanner, expands on the concept. In it, Stephen Aizenstat asks " what would a psychology look like that is based on an ecocentric worldview rather than an egocentric one?" Alan Durning says "sustaining the environment that sustains our humanity will require that we change our values." The book is generally heavy going; "Radical Ecopsychology" by Andy Fisher may be more readable.

Roszak emphasizes that human activities with respect to Earth are "crazy", insane, or mad in the psychological sense. It's crazy not because of what we are doing to other species or to Creation, but because of what we are doing to our own species, our offspring, and ourselves. In "The Voice of the Earth" [p. 68] he says: "The species that destroys its own habitat in pursuit of false values, in willful ignorance of what it does, is 'mad' if the word means anything [at all]." We are irrational in continuing to do things that we know are self-destructive.

Ecopsychologists argue that separation of humans from nature causes both individual and societal mental illness. Separation from the natural world, which is the world in which humans evolved, explains why humans don't care about destroying nature or feel that nature is just there for humans to use. Feelings of isolation and dysfunction in so many people today are rooted in this fundamental separation. The consumerist concern over money, status, and things may be a response to isolation from nature. Conversely, reducing the separation by integration with (in the sense of concern about, enjoyment of, communion with) nature can reduce levels of anxiety, stress, and fear leading to improved mental health.

Much has been written about job stress, the rat-race, drug use (both legal and illegal), road rage, and many other forms of individual and communal anxiety in urban environments. Vacation travel, the weekend flight to the country, and even the daily commute from the downtown office to the relatively green space of suburbia, all supposedly relieve stress, provide relaxation, and motivate us to get going again when we return to the stressful work environment or urban lifestyle. Many cities are trying to re-green urban areas by planting trees and creating parks for both temperature control and psychological effects. We obviously get something out of being closer to "nature", closer to green space, even just being outdoors.

We humans need natural scenery and drive or fly thousands of miles to get it (often ignoring the natural beauty of our local bioregion, see the Bioregionalism chapter). We humans need wilderness for our inner life, not just for our outer recreation. We also seem to need charismatic animal and even plant species (Sequoia, Saguaro, maples in autumn). Romantic poets and nature writers over millennia have expressed this need. Henry David Thoreau, Walt Whitman, John Muir, Aldo Leopold, Edward Abbey, Terry Tempest Williams, Barry Lopez, Wendell Berry, Mary Oliver, and Thomas Berry are among the best at expressing this inner need for experiencing wild nature. E. O. Wilson describes "biophilia", the inner need in each of us to relate to other species, to "seek connection with the rest of life". Paul Falstich uses the similar term "geophilia" for the need to be connected to a place, to a certain natural landscape [Wild Earth, Spring 1998, p. 81-89]. Such need may derive from a possibly genetic survival benefit. People prefer landscapes that are open (good visibility) with trees (hiding from predators); our "parks" mimic the African savannah in which humanity developed. Bioregionalism (see the Bioregionalism chapter) represents a conscious practice driven by geophilia.

A 30-minute video "Ecopsychology" from The Foundation for Global Community) features Theodore Roszak, Sarah Conn, and Carl Anthony discussing the concepts of ecopsychology. Roszak started a newsletter, Ecopsychology On-line in 1996; it only lasted six issues but they are still accessible. The best current web site I know is the International Community for Ecopsychology, which publishes an on-line journal called "Gatherings". Michael J. Cohen is a web practitioner of ecopsychology; his

Project Nature Connect offers courses and workshops online and off. Naropa University in Boulder CO offers a M.A. with ecopsychology emphasis, but the nascent field has not penetrated very deeply into classic psychology studies. In 2002 Roszak could still say that "few psychologists have any interest in relationships that reach beyond couple, families, and maybe the work place" ["Ecopsychology Since 1992", Wild Earth, Summer 2002]. There is no nature, no wild, no natural environment in psychiatry and psychology. On the other hand, ecopsychology argues that mental health is not only about relationships with the self and with other humans, but also about relationships with nature, that is with other species and with Earth.

In 2006 Richard Louv gave ecopsychology a huge boost with the success of "Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder". Louv says "Nature-deficit disorder describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses. The disorder can be detected in individuals, families, and communities" [p.34]. Television, computer games, headphones, motor vehicles, sports arenas, and walls in home, store, workplace, and even theater or museum, all work to produce the isolation and disconnect. Many studies have found positive effects of outdoor and wilderness experiences that teach survival skills, self-reliance, and independence on youth, teens, and adults, but few psychiatrists or even conservationists have paid any attention. Such programs for adults and for troubled youth can change individual attitudes and lives. Obviously even a view through a window can have a restorative effect. Parks, trees, animals and plants, or any other outdoor time lessens depression, lessens fear of crime, increases happiness, and may be needed for good mental health.

Children and Nature

In "Deep Economy" Bill McKibben states that "one report in [the year] 2000 found that the *average* American child reported now higher levels of anxiety than the average child *under psychiatric care* in the 1950s: our new normal is the old disturbed (ital. au.)". Over the same time period, children (and adults) have become "over-scheduled" with soccer practice, music lessons, gymnastics, and homework, all often starting in kindergarten. Television, computers, and video games now fill any remaining "play" time. The isolation of children from nature has greatly increased and childhood obesity has greatly increased. Some schools have abandoned outdoor recess in order to "teach to the test"; there is no test for outdoor or nature awareness. Is there a correlation between increased anxiety and obesity in children and decrease in unscheduled outdoor play? *Isn't it ridiculous that parents may need to schedule unstructured indoor and outdoor play time?*

These issues were raised by Gary Paul Nabhan and Stephen Trimble in their 1994 book "The Geography of Childhood: Why Children Need Wild Places". But the time was not yet right for widespread concern. Louv's "Last Child in the Woods" in 2006 struck a much more resonant chord and appears to be having huge influence. Louv documents adverse effects on children of today's indoor, over-scheduled, protective, electronic environment and a positive influence of time in nature on learning, hyperactivity, and mental illness. He says "Children need nature for the healthy development of their senses, and, therefore, for learning and creativity" [p.54]. The calming effect of nature on hyperactive children doesn't need to be in the true "wild", but can be simply in a natural empty lot or back yard. Richard Louv is now the Chairman of the Children and Nature Network, which works on reconnection.

Ages 6 to 12 seem to be the period of major learning about the natural world. Yet there is very little time in today's elementary schools for outdoor education. (Sports on artificial playing fields don't count.) Environmental education often gets relegated to a one-week "environmental camp" in one grade, instead of being inherent in a school's daily curriculum.

Nabhan and Trimble argue that children need wild places within 100 yards of home. A 100 yard radius, the length of a football field, does not seem like too far to allow children to roam, though it covers an area of over 5 acres. However, according to the Community Associations Institute, 47 million Americans live in homes governed by some kind of owners' association. Louv states that countless housing associations and local governments "have virtually outlawed unstructured outdoor nature play, often because of the threat of lawsuits, but also because of a growing obsession with order [i.e. neatness]" [p. 28]. The "community" does not

want tree houses, "forts", natural sandboxes, planks over streams, or unofficial trails.

Louv's book has stimulated a major movement for creating "natural playgrounds" at child-care centers, schools, and business places. The Natural Playgrounds Company designs and constructs such areas. Here is a description of one of their playgrounds in Florida:

> "A beautiful little 'mountain' provides the opportunity for a tunnel, climbing wall, post climb, slide, sand play area, and bridge; a big old, curved tree branch planted upright became a perfect spot for a rope for climbing and swaying; a dead tree was cut tall so it could be carved into a child-friendly sculpture; an old-fashioned porch swing was nestled in a short arbor; small fountains spout water in a special water play area; the top of the dead tree was laid down and used for climbing; a willow tunnel provides the 'grand entrance'; and gardens and a grassy area were placed near the edge of the tree canopy on the sunny side. Hard-to-find (in Florida) natural boulders were introduced so children would be able to see and feel their texture and temperature."

Certainly replacing old-style playgrounds of swing sets and climbers with more natural, more varied, and more variable equipment constitutes a significant step in the right direction. *But I wonder whether such artificial, human-constructed "nature" can satisfactorily substitute for the real thing, for spaces where human (adult) control is limited and weedy flowers, shrubs and trees harbor insects, salamanders, and frogs. Isn't the spontaneous building of hideouts and forts also important?*

In a larger sense, does pseudo-nature or faux nature have the same effect on children (and adults) as the real thing? Are fountains and gardens, Christmas trees, zoos, grass, nature photographs, and nature on TV sufficient? Are kids getting an outdoor education at a downhill ski area where they get whisked up the mountain by fossil fuel so they can ski speedily down on artificial groomed snow? What about kids riding their bikes around a campground road while their parents sit in an RV watching TV? To me it seems that it's not looking at nature that's important for kids, it's playing in nature. (I hesitate to say playing "with" nature, which implies pulling legs off insects and seeing how long a bottled frog takes to die, but maybe it is this type of unstructured, unsupervised play that is important.) Collecting of insects or stones leads to listing birds or minerals, which leads to caring for the living and non-living Earth.

Now that I've argued for kids playing unsupervised in the woods close to home, I also need to argue the importance of parental involvement. If parents think that outdoor education involves only a ski slope or a foliage

drive, their children will grow up thinking that too. If parents get their nature on TV, kids will grow up expecting adrenaline rushes. Louv [p. 169] quotes Billy Campbell on how kids feel about their local nature after watching television: "If they don't see a grizzly bear rip apart a caribou calf, then it's boring."

Childhood Influences

My sister and I had an amazing amount of freedom and independence beginning when we were very young. It probably started with both parents working through World War 2, long before television news, and perhaps modern overcrowding, created paranoia. We played in woods behind houses and in overgrown house lots in suburbia. And we owned an old 80-acre farm in New Hampshire where we spent weekends and weeks summer and winter even though it had no electricity and little indoor plumbing. Our parents took us bushwhacking using USGS maps. We cut ski trails, planted trees, sawed firewood, and gardened, spending much time pulling "witch grass". We swam in lakes, hiked, and even had two horses one summer.

Since then, much of my life focuses on being outdoors, preferably enjoying New England's woods. I have studied the ecology of these forests as a scientist. I have studied their birds as an avocation. The roots of my ecocentrism go back to my childhood, and parents who enjoyed many of these same things, though they would never have been able to express any feelings about WHY being in the forest was important.

In my gloomier times, I wonder whether an individual can ever become truly ecocentric if they have not been raised by parents who are outdoor types or nature-lovers? I doubt that our current school systems can teach ecocentrism through very limited outdoor education. How otherwise then can we as individuals gain an outdoor focus to our lives? Then how do we deepen that focus well beyond the expensive equipment culture of backpacking, rock-climbing, and skiing? Can this happen to adults who have had no real nature experiences as children? How easy is it for adults to change their relationship with nature?

Roger and Sarah Isberg answer these questions positively in their book "Simple Life" and their Brookside School of Simple Life. They describe the varieties of learning and development of values that occur with living in and relating to the outdoor world. "A widespread change in human attitudes towards nature requires a triad of experiential, physical and intellectual understanding" [p. 171]. Their personal and poetic

experiences of canoeing, hiking, and with the Sami people of northern Sweden, show how such understanding can be attained.

Resistance to Change

At the beginning of the Sustainability chapter I briefly summarized some of the important writings of the period around Earth Day 1970. These and later "environmental" writing and speaking emphasized the negative aspects of humanity's future if we did not soon mend our ways. Only recently have we begun to understand that threats of "gloom and doom" fail to change people's behavior. This section looks briefly at the psychological reasons why people are resistant to change. "Invisible Walls: Why We Ignore the Damage We Inflict on the Planet ... and Ourselves", by Peter Seidel, has a great deal more to say about this, especially about innate, perhaps genetic, aspects of human behavior, and the development of human ethics.

Selfishness appears to be a built-in natural drive. The primary purpose of life apparently is to continue life. Therefore individual organisms try to pass on their genes to the next generation. Individuals must remain alive long enough to do so and this requires a built-in selfishness, an effective statement that "my life comes first". *I believe that the question of usefulness of a life after genes have been propagated depends on the ethics developed by the individual's species and tribe; but that is not particularly relevant here.* Obviously, many humans have moved far beyond meeting the basic "needs" for successful procreation, usually stated as food, clothing, and housing, and have added an immensity of "wants" that are felt to be necessary to a successful life. This transition of selfishness from needs to wants can be seen as "addictive" behavior when it involves destroying the underlying natural systems that satisfy both the needs and the wants. Because of built-in selfishness we have a difficult time giving up our addictions to consumption of materials and burning of fossil fuels, even though we know that this is poor behavior. Seidel says "We are good at criticizing others, but poor at applying our professed ethical principles to our own actions" ["Invisible Walls", p. 158].

Confessions

This is the appropriate place for me to confess some things I do that I know are not sustainable, things the Earth would be better off if I did not do. I have just reached a personal goal of being one of the first three people to hike all 1420 miles of trails described in the White Mountain Guide of the Appalachian Mountain Club. Although I used bike and bus for some of it, this

effort required some unnecessary automobile travel; I could have hiked more locally. I could also have reduced my travel by not going to the North American Orienteering Championships this fall and winning yet another age-class title. Just recently I gave in to the technology craze and bought an MP3 player, a digital camera, a fancy water bottle belt for running, and three eyepieces for my telescope – all things I have lived perfectly well without for 69 years. I bought yet again a season pass for downhill skiing at Cranmore (the only good thing about this is it's only two miles from home). All of these things admittedly have only one motivation – pure selfishness.

Another aspect of selfishness leads to separation of an individual from problems. An individual may be concerned, but the problem is separated by virtual reality and by distance. The violence we see on TV news every day happens to and by others, not to me or people I know; my friends and co-workers are not violent and are rarely victims. The violence we do to Earth becomes acceptable because we don't actually see ourselves doing it. Carbon dioxide, unfortunately, is invisible. *I wonder how things would be different if all the CO2 we produce by driving, heating, and air conditioning were purple instead of transparent.* When we don't directly see the impacts of our adverse behavior, we don't internalize it. Too easily we say "it's not me that is chopping down rain forests and polluting air and water."

Many species of animals have developed family groups or tribes, and, in humans, societies. Such groups provide increased chances of survival and passing on of genes. Within the group there is strong incentive to "go along with the crowd", to do what "everyone else" is doing. Humans form many such groups; those involving race, nation, and religion are particularly relevant here. Such groups provide some kind of comfort that is obviously important. But behavior in such groups is notoriously difficult to change. Individuals who act or think differently from the group norm are called outcasts or heretics. There is strong disincentive to be different, which leads inevitably to the statement "Why should I change if no one else does?"

Among the dissidents and heretics, those who do see and understand the problems, a strong tendency exists to get overwhelmed by the immensity of the personal and societal changes that are needed and, effectively, to give up. "It's just hopeless; there is nothing that can really be done about it." This leads to deliberately ignoring the issues, to effectively hiding one's head in the sand, or even to despair. "It's a big problem, but just one person like me can't solve it." I have friends who take the "eat, drink, and be merry, for tomorrow we die" approach. They say "the faster we use up oil the better" so we can get on to the oil-less

future, and even "humans are a flawed species" so it's OK if we do ourselves in.

The Council of All Beings

Feelings of impotence combined with deep respect and love for other species and for the wonders of Earth generate grief and despair over the whole situation encompassed in this book. To express this grief, to bring it into the open where it can be recognized, discussed, and partially overcome, John Seed, Joanna Macy, Pat Fleming, and Arne Naess wrote "Thinking Like a Mountain: Towards a Council of All Beings" in 1988. The phrase "thinking like a mountain" was first used by Aldo Leopold as a chapter title in his classic "Sand County Almanac". Only a mountain, Leopold says, can think objectively about the howling of wolves and about erosion caused by overpopulated deer herds that strip the mountain of its protective vegetation after humans have killed all the wolves. Mountains have a very long-term and a very comprehensive point of view; they consider Earth and its happenings in ways that most humans cannot.

Joanna Macy, of affluent American background, studied Buddhism in India, and later developed workshops on dealing with grief and becoming empowered to act. Together with John Seed, who was working in Australia to save the world's remaining rain forests, and Pat Fleming, they developed a grief and caring ritual called a Council of All Beings, which forms the core of the book "Thinking Like a Mountain". The ritual is based in deep ecology, a philosophy of interrelationships among humanity, other life forms, and Earth itself (see the Deep Ecology chapter). A Council of All Beings workshop contains three stages: expression of mourning for the state of Earth, remembering human connectedness with nature over millennia, and sharing in the Council itself. In the Council, each (human) participant plays the role of an organism from another chosen species, or a physical component of Earth. (I have role-played a piping plover and an Armillaria fungus.) For a time, each individual meditates, preferably outdoors, on their chosen role. On reconvening, representative masks are made. Then the Council is begun by invoking first the four directions and powers and then the spirits of beings past, present, and future. The Council hears from each representative about their status on Earth and about how humanity is impacting them. The ritual may continue with a sharing of gifts with the humans, describing what humanity receives from these other beings. The Council often closes with a ritual dance. For a manual on how to organize a Council, see the Deep Ecology web page of the Rainforest Information Center.

The Council of All Beings spread rapidly around the world, and, no doubt, thousands have been held. Every one is different, depending on leaders and participants. There is only a little more guidance than what I have described in the preceding paragraph. But taking the role of a non-human being, living or not, can have a deep, long-lasting effect on a

person. Expression and sharing of gloom and expression and sharing of the thoughts of another being create incentives to change thoughts and actions. Theodore Roszak says that many of us are grieving profoundly for what we are doing to Earth, and that this is distinctly different from guilt, shame, or fear. Healing ourselves and healing the Earth are seen as commensurate and inseparable. The Council is one expression of the deep connection between wellness of an individual and wellness of Earth.

Mindfulness

Watching nature/wildlife shows on TV and looking out a window may be necessary to make one ecocentric, but cannot be sufficient. One must get out into nature and one must work to become consciously aware of connections with the other-than-human world. "Mindfulness" is the seventh part of the Buddhist Eight-fold Path. It consists of intentional awareness of thoughts, actions, and interactions, or an opening of the senses to sight, sound, smell, feel, and taste. Listening to the mind's commentary allows an individual to choose what part of the commentary to act on and what part to ignore or let go. In such a sense, mindfulness practices have been used as therapeutic tools. Mindfulness extends to all aspects of personal behavior and personal choice. Some ecocentric western Buddhists, such as Joanna Macy and Stephanie Kaza, encourage mindfulness with respect to ones natural surroundings, involving connection to Earth and its beings. Macy teamed with Molly Young Brown to write "Coming Back to Life: Practices to Reconnect our Lives, Our World", a book of individual and group exercises of mindfulness, gratitude, despair, and connection.

Mindfulness includes learning from indigenous peoples such as Native Americans, from pagan spirituality, and from Eastern religions about integrating human life with nature and how to live sustainably. Learning to see ourselves as part of a community and developing a sense of place (see the Bioregionalism chapter) can have therapeutic value. Extending community to the other-than-human brings up emotions of love, concern, care, and affinity.

Mindfulness of nature includes learning how to recognize and to know, birds, trees, streams, watersheds, and ecosystems. Awareness of the sounds of the natural world, such as birds, wind, waterfalls, and waves, provides a connection that cannot be made with headphones on. How can you really know a yellow or black birch until you have tasted it? How can you taste a blueberry unless you can tell it from a bluebead? Roger and Sarah Isberg say "If we don't participate, we become observers or consumers…. Simple life is a meeting with wilderness. In this meeting, we get to know ourselves." ["Simple Life", p. 131]

Playing in an environment largely free of human influence can be a psychologically elevating and freeing experience. Celebration of nature by getting out in the rain, heat, cold, snow, and wind, by listening to the

sounds of birds and water, by savoring the beauty of wild flowers pushing through last autumn's leaves, by wondering at the tunnels of moles and voles in snow and soil, by feeling and smelling the organic matter and mineral soil that provide food and water to plants, by becoming aware of water rushing upward to the treetops and evaporating into the sky to make rain, and by worshipping the sun, source of all the energy that makes all these - such celebration is a joy and reward of life.

The Universe Story: Continuing Creation

"I am so enthralled by the Universe that I think IT is the Great Mystery itself. I don't need anything outside of it. The hydrogen atoms in your body and mine were made shortly after the beginning of our Universe's Time. When we drink a glass of water we make an actual communion with our beginnings. I think that is awesome, much more awesome that the idea of magical transubstantiation." – Bill Bruel

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"Some have asked me what understanding of Nature one shapes from so strange a year [in the sand dunes of Cape Cod]. I would answer that one's first appreciation is a sense that the creation is still going on, that the creative forces are as great and as active today as they have ever been, and that to-morrows morning will be as heroic as any of the world. *Creation is here and now* (ital. au.)." – Henry Beston ["The Outermost House"]

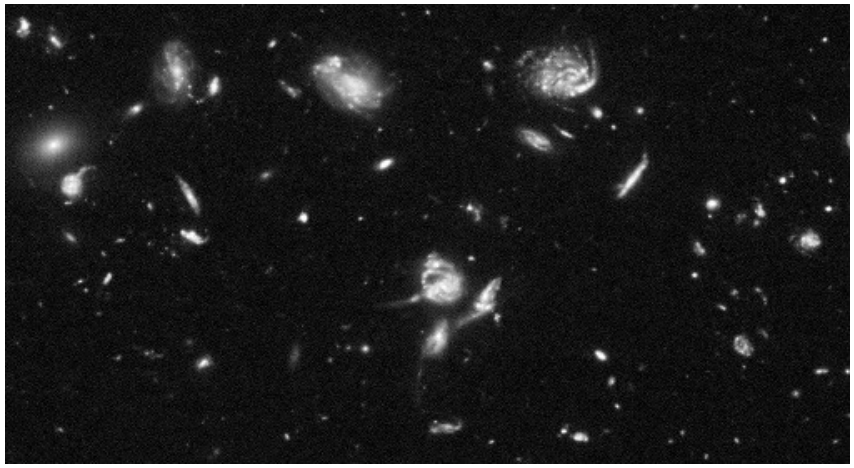
Every individual needs and has a story about how "I" am related or connected to everyone and everything else, whether the story is stated overtly or just understood internally. Each human culture provides such a creation story, myth, or cosmology that explains how Earth came into existence and how living beings were created on it. The story explains the Sun and the night sky, including the Moon, planets, and stars. It explains land and water, plants, animals, and people. Each religion bases its ethical teachings, its teachings about correct behavior, on its creation story. So-called "Western civilization" has used the same, essentially unchanged, creation story for many centuries. It is the 2,500 year old story told in the Book of Genesis in the Bible.

David Korten, in "The Great Turning" [p. 250] describes Thomas Berry's view that the Black Death of the 14th century, which killed perhaps half the population of Europe, split the story into two cosmologies, a spiritual story and a secular story. The spiritual story of

religion focused on transcending nature, on the next world or the after-life, and on obedience to "God". The secular story focused on learning to control and dominate nature. Both separated humanity from nature, placing humans just below God and above all other living and non-living beings. The religious story of obedience (in order to attain the good afterlife) led to obedience to husband, to males, to government, to race, and to religion, producing wealth and power as earthly reward and heaven as final reward. The secular story evolved into materialism and mechanistic science. The secular story supports the social Darwinism described in the Ecojustice chapter. No other stories are preached in our culture; and our present cosmology does not view Earth and the Universe as sacred.

Flaws began to show up in the Western creation story when Kepler and Copernicus showed that Earth and the other planets revolve around the Sun rather than around Earth. Galileo discovered satellites around Jupiter, and astronomical knowledge has proceeded apace since then. Fraunhofer discovered absorption lines in the spectrum of the Sun, and later scientists showed that each chemical element absorbs and emits light at very specific wavelengths or colors. Fizeau used the Doppler effect to explain apparent differences in wavelength of these spectral "lines" in light from different stars. (The Doppler effect states that wavelengths are increased or stretched when the source is moving away from us and decreased or "squished" when the source is approaching us, just like sound from a passing siren.) Scientists found that some stars are moving toward us and some are moving away from us. About 100 years ago, Edwin Hubble found that virtually **all** the fuzzy "nebulae" that Harlow Shapley later showed were whole galaxies, are moving **away** from us, and the farther away they are, the faster they are moving away! Their spectral lines are all shifted toward the red end of the spectrum; this is called "red-shift". Not only was our own Sun just an ordinary star in the "suburbs" of our own Milky Way galaxy, but the Milky Way was just one of many similar galaxies.

The first big space telescope, named after Edwin Hubble, has taken many dramatic pictures of our Universe and the many kinds of stars and galaxies that inhabit it. You can wonder over these on the HubbleSite or the Hubble Information Center. The most amazing picture is the Hubble Ultra-Deep Field. (If you have broadband be sure to download the Publication JPEG file of this.) About 10,000 galaxies can be counted in this image; they come in a bewildering array of shapes and sizes and ages and distances. Yet this image covers only as much of the sky as can be seen looking through an eight foot long soda straw; it would take 7,500,000 such images to cover the whole sky! The bottom line is that there are **billions** (thousand million) of galaxies in the Universe, and each galaxy contains **billions** of stars.



A portion of the Hubble Ultra-Deep Field. All the fuzzies are galaxies.

What we know about these stars and galaxies does not derive just from a few pictures from expensive telescopes. Human science over the last few centuries has produced an immense, extremely complicated, and highly interlocking collection of facts and rules that generalize on those facts. Some of the rules are remarkably simple:

- Newton's Law of Gravity: $F = g\ m_1\ m_2 / r^2$
- Maxwell's Equations of electromagnetism:
  $\nabla E = r / e_0$; $\nabla B = 0$; $\nabla \times E = -dB/dt$; $\nabla \times B = J + dE/Dt$
- Einstein's mass-energy relation: $E = m\ c^2$

Yet these simple equations, which you do not need to understand, can be used to calculate much of the behavior of the contents of the Universe. Newton's Law governs the movement of baseballs, missiles, planets, and galaxies. Maxwell's equations are invoked every time you flip a light switch or turn on your television as well as by the transmission of light and all other electromagnetic radiation through the Universe. Einstein's equation applies at scales from individual atoms, through nuclear power plants, to the Universe itself. Each of us, by our very actions of living and using modern technology, validates the fundamental laws of physics every day. Similarly the laws of chemistry, based on Mendeleev's Periodic Table of the elements and on the three basic particles, protons, neutrons, and electrons, are validated by the simple acts of driving a car or taking a vitamin pill.

Since the nineteenth century works of William Smith on stratigraphy and fossils, Louis Agassiz on continental glaciation, Charles Darwin and Alfred Russell Wallace on evolution of species, and Gregor Mendel on genetics, the history of Earth and its life has been completely rewritten.

Here again, science consists of an immense, extremely complicated, and highly interlocking collection of facts and generalizing rules. Molecular genetics, which tinkers with DNA, the very code of life, validates the same rules of physics, chemistry, and biology that also underlie the new history of the Universe and of Earth.

So what do we do now with our so recently shattered creation story? We have begun telling a new story, based on the discoveries of science. It is variously called The Universe Story, the New Creation Myth, The New Story, the New Cosmology, the Great Story, or the Epic of Evolution. The Universe Story starts almost 14 billion years ago with the Big Bang, when our universe created itself. The story moves through the combining of protons, neutrons, and electrons into hydrogen, helium, and a little lithium in the first moments of the Universe. Then the primordial soup separates into clumps that create galaxies by the billions, and billions of stars in each galaxy. The Story then focuses on the creation of our solar system and Earth about five billion years ago. It continues with the beginning of life on Earth and the development of species by evolution. Humans appear quite recently and only in the past few thousand years begin to take over Earth and its systems.

The amazing thing about this new creation story is that it is both awe-inspiring and true. This new story for the coming Ecozoic Era, which will occur after the success of Ecoshift, tells that humans **are** Earth, that humans **are** the Universe. Each of us is a unique component of the evolutionary creation that continues through us. We are the Universe become conscious of itself. We are made of stardust and ALL our ancestors were successful. We are born from and return to the natural world.

Development of this new and ecocentric creation myth has been led by Brian Swimme and Thomas Berry. Their book "The Universe Story", first introduced my favorite name for the story and remains the classic work. Swimme's web site includes a magazine interview, his classic 12-hour video "Canticle to the Cosmos", its short 80-minute version "The Hidden Heart of the Cosmos", and audio tapes by Thomas Berry. Jennifer Morgan has written and Dana Lynne Andersen marvelously illustrated a series of three books that tell the Universe Story for children: "Born With a Bang", "From Lava to Life" , and "Mammals Who Morph". I've given these to my young grandchildren, who love them.

Connie Barlow and Michael Dowd are making a life work of spreading the Universe Story. They travel the country, living out of a van which is their only home, talking and preaching the Story (Dowd is a minister). For more of the story online, read Connie Barlow's "The Way of Science and the Epic of Evolution" and Michael Dowd's "The Big Picture" on their Great Story web site. This site has lots of readings, talks, and links. Cathy Russell is developing an Epic of Evolution web site with many links, activities, and celebration rituals. More rituals that tell the story can be found on the Deep Ecology page of the Rainforest Information Center, led by John Seed and Ruth Rosenhek.

Books about the history and future of the Universe abound these days, especially books about the formation of the Universe in the Big Bang. The husband and wife team of astronomer Joel R. Primack and lawyer-singer Nancy Ellen Abrams wrote "The View From the Center of the Universe: Discovering Our Extraordinary Place in the Cosmos", which combines scientific knowledge with the apparent uniqueness of humanity in order to express that Earth, and each of us living on it, exists at the center of time and space. This book combines the Universe Story with many other aspects of Ecoshift. Other similar books include Connie Barlow's "Evolution Extended", Paul Brockleman's "Cosmology and Creation", Fritjof Capra's "The Web of Life", and E. O. Wilson's "The Diversity of Life".

Creation of the Universe

The speed of light in a vacuum is a constant 186,000 miles per second (or 300,000 km/s). This value has been tested innumerable ways and times. Distances to astronomical objects are usually stated as the time it takes light to travel that distance.It takes light from the Moon a mere second to get here. Light from the Sun takes 8 minutes. One "light year" is 60 x 60 x 24 x 365 x 186,000 = 6,000,000,000,000 (6×10^{12}) miles. If that seems like a very long way, just read on.

The nearest star to our Sun is Alpha Centauri, the fourth brightest star in our sky and 4.4 light years away. Actually this is a system of three stars that orbit each other, two sun-sized and one a dwarf, Proxima Centauri, that is now closest to us. Sirius, the brightest star in our sky, is 8.6 light years away. When we move as far away as Vega, only 25 light years, "our" constellations become almost totally unrecognizable because of three-dimensional space. The sky we see, the constellations we name, and the stories we tell about them are unique to our star and Earth, its living planet. All the stars we see with our naked eyes, about 2000 on a dark night far from light pollution, are still very close to us with respect to the 100,000 light year diameter of our Milky Way Galaxy, whose extremely flattened disk we see as a misty brightness across the sky. Our galaxy probably contains 200 billion stars. Only a small fraction of these have been photographed by telescopes; the rest are hidden by lots of dark dust.

The farthest away we can see with our naked eyes is much farther than any stars in the Milky Way. It is a fuzzy spot in the constellation Andromeda that is called the Andromeda Galaxy. This galaxy is about the same size as our Milky Way and is very close to us as galaxies go at 2.5 million light years. To get a real feel for our place in the Cosmos, find the Andromeda Galaxy, either from a star chart or by someone else pointing it out, and ponder on this fact: if you were there in the Andromeda Galaxy, looking at the Milky Way, it would look just the way the Andromeda Galaxy looks to you. Then think that you are not only looking through

15,000,000,000,000,000,000 miles but back in time 2,500,000 years. The Magellanic Clouds, too far south for me to see from home, are smaller galaxies that are closer to us. All these galaxies are part of the "local group" that interacts gravitationally. The Milky Way and the Andromeda Galaxy are pulling each other closer (Andromeda is one of just a few blue-shifted galaxies) and will merge in about 2.5 billion years. Binoculars and small telescopes increase greatly what our eyes can see. With my 8-inch reflector telescope at 100x I can see a group of galaxies in the constellation of Virgo that are 60 million light years away.

Star-gazing and Light Pollution

For me, an exciting and important part of my creation mythology involves taking my telescope outside at night and looking into the cosmos in both space and time. I can see remnants of super-novas that have produced heavier elements. I can look at clusters of new stars only a few million years old and nebulae like Orion in which stars are forming now. When I see a galaxy in the Virgo cluster through my telescope I am seeing what these galaxies looked like 60 million years ago when the last dinosaurs were roaming Earth. My eye is actually receiving each second about 100 photons that have been coming straight from that galaxy to me for all that time. This is awe-inspiring! It makes me feel connected to the story of the Universe.

Unfortunately, human isolation from the creative power of the cosmos has become severe over the past hundred years. Excessive and inappropriate outdoor lighting, not only assaults our senses, pollutes neighbor's yards, and wastes energy, but also hides our glorious night sky, which is our window into the Universe. Light pollution is not necessary, and it keeps us from looking at the cosmos that begat us. The International Dark Sky Association strives to reduce light pollution and help reconnect us to our creation story.

The red-shift of galaxies has turned out not to be the classic Doppler effect, but a "cosmological red-shift" caused by the expansion of space itself. Realization that the Universe itself is expanding slowly overcame adherence by human scientists, let alone the rest of humanity, to the concept that the Universe must be eternal. Knowing the locations of galaxies and the speed at which they are retreating from each other, we can calculate backwards in time and show that exactly 13.7 billion years ago **all** the galaxies in the Universe were at a single point. The Universe was created and started expanding at that point and time. Astronomer

Fred Hoyle was so disgusted with this concept that he sarcastically named this moment of creation "The Big Bang". In spite of many efforts to come up with a different name, like Swimme and Berry's "Great Flaring Forth" or "The Great Radiance" of Philemon Sturges, the name has stuck, even though a loud sound is an irrelevant concept for the occasion.

The occasion of the Big Bang brought into existence all the laws of physics and chemistry that we know, and they have not changed since then. What produced the Big Bang, and how, remain questions for metaphysics or religion. Some cosmologists favor a mathematical concept called string theory, which requires ten-dimensional space and leads to a conclusion that there may be an infinity of universes popping in and out of existence, each having different laws of physics. One example of the various books on this subject is Leonard Susskind's "The Cosmic Landscape: String Theory and the Illusion of Intelligent Design".

In the unimaginably short time of 10^{-37} seconds, the Universe sprang into being. Over the so-called "inflation phase" of the next 10^{-32} sec it expanded incredibly rapidly and was unbelievably hot and dense with electrons, neutrinos, and quarks of matter and anti-matter winking in and out of existence. By one second the temperature had cooled enough for quarks to combine into protons and neutrons. Particles of matter and anti-matter recombined until all the anti-matter was gone, leaving the slight excess of matter for the later Universe. Randomness at this time created minute variations in density, which ultimately allowed condensation by gravity into stars and galaxies. After three minutes single protons (hydrogen) and neutrons started to combine into deuterium (proton plus neutron) and helium (two protons and two neutrons) nuclei, within a cloud of electrons. The Universe soon consisted of 76% hydrogen nuclei and 24% helium nuclei. All the hydrogen atoms in your body were created in the early minutes of the Universe and have been recycling through stars and through life on Earth since then.

This normal matter of atoms of elements, which includes all the stars and galaxies we see, comprises only 4.6% of the total mass/energy of the Universe. Another 23% is "dark matter", whose make-up is not yet known, but may be high-energy neutrinos. The remaining 72% is the even more mysterious dark energy, which appears to be an inherent property of space-time because its density (its quantity per unit volume) remains constant even as space expands.

After 400,000 years of cooling, the energy of electrons became low enough that they combined with hydrogen and helium nuclei into whole atoms. This creation of electrically neutral particles from the former positive nuclei and negative electrons caused the Universe to become transparent. Light began traveling without being quickly reabsorbed. In 1965 Arno Penzias and Robert Woodrow Wilson used a radio telescope to detect this "light", which is called the cosmic microwave background radiation. It is red-shifted so much that it appears to come from an object

with a temperature of only 3.4ºK (degrees above absolute zero), just as predicted earlier by cosmologists studying the physics of the Big Bang.

The slightly uneven spatial distribution of the background radiation reflects the early density variations of the Universe. Over the next billion years gravity, acting on these density variations, magnified them, creating clumping of hydrogen and helium into stars, galaxies, and galaxy clusters. No more galaxies have been created since, though gravity does sometimes pull them together so that they interact.

The first-generation stars consisted of hydrogen and helium in the same ratio as the early Universe. Stars are huge furnaces of nuclear fusion. Unless they are very small, gravity pulls hydrogen together under so much pressure that hydrogen nuclei fuse into helium, just as in the primordial Universe. Helium and hydrogen nuclei also fuse to create lithium, two helium atoms combine to make beryllium, and addition of another proton makes boron. A separate process inside hot stars creates carbon, nitrogen, and oxygen; other processes can then make still heavier atoms up through iron. As stars burn up their hydrogen fuel, they do various things depending on their size, including collapsing, expanding, and even exploding as a nova. During this dying, they blow off into space some of the various elements they have produced. The space dust and gas from first generation stars can re-accumulate by gravity and be pulled into second generation stars that are richer in heavier elements. These in turn can also die. When a massive, cool star has burned all its light elements so that mostly iron is left, it collapses rapidly by gravity and then explodes as a supernova. Such an explosion creates all the elements heavier than iron and distributes them into space. All the burning of all the stars since the birth of the Universe has transformed some of the hydrogen into helium and all other elements, so the current normal matter of the Universe is now 70% hydrogen, 28% helium, 2% all other elements.

The variety of kinds of stars, of different sizes, masses, ages, and elemental content bewilders the mind and keeps astronomers busy learning about the amazing contents of the Universe: brown dwarfs, white dwarfs, variable stars, red giants, black holes, novae and super-novae of different types, pulsars, quasars, and on and on. Some of the bright stars that form the famous constellation of Orion are only a few million years old. Then there are the remains of exploded stars like planetary nebulae and the star-forming Orion Nebula, which you can see with your naked eye glowing in Orion's sword. When we look closely at the Orion Nebula, we can see hundreds of stars being born from "pillars" of dust.

The Universe Story tells the myth of Tiamat, the name Swimme and Berry give to a supernova in our part of the galaxy 5 billion years ago. Tiamat (and probably a few other explosions too) has provided us with all the elements that we find on Earth. It is not far-fetched to say that we are all born from the stardust of Tiamat. By half a billion years after Tiamat exploded, some of its "ashes" had grouped together into the star and the planets that are our Solar System.

Only within the past ten years have astronomers found ways and built instruments capable of detecting the effects of planets orbiting around other stars. Now we know of several hundred planets outside our own system, including some multi-planet systems. So far all these planets are larger than Earth, more like Jupiter and Saturn, but the next few years should bring detection of Earth-like planets in Earth-like orbits. Recent research suggests that nearly all stars have small planets.

Will we ever be able to travel to such planets? Although we have been to our Moon, it is only one light-second away, and the cost of going there has prevented further visits now for 35 years. We have only contemplated the possibility of traveling the mere 8 or so light minutes to Mars or Venus. Back in the science fiction era of the 50s and 60s, some people seriously proposed populating these planets in order to reduce overpopulation on Earth. But we never thought about how many spaceships a year it would take to do this or the amount of energy required for transport and "terraforming" to make them habitable. We have sent only four spacecraft to the far reaches of the Solar System. Voyager 1, launched in 1977, is now 13 light hours away, three times as far as Neptune. At this rate it would take 3000 years to reach the nearest star! Humanity apparently is irrevocably bound to our own solar system for the foreseeable future.

The story of the Universe continues through time. By comparing our Sun's evolution to that of other stars of similar mass and composition, we know that in another billion years our Sun will heat up enough that life on Earth cannot continue. By 7 billion years from now our Sun will expand into a red giant star, losing mass by emitting gas. Earth will probably survive because it will move away from the expanding but ever lighter sun. Soon after, the Sun will run out of its hydrogen fuel, shed its outer parts into nebulous gases, and shrink into a white dwarf star made mostly of helium.

Although looking into the future of the whole Universe is somewhat more questionable, there evidently are good reasons to expect that in another 100 billion years the Universe will have expanded so much that all galaxies will be invisible to each other. By 100 trillion years the last stars will have burned out and the whole Universe will be dark. In an almost unimaginable length of time thereafter, about 10^{50} years, nothing will be left but black holes that will then evaporate over the next 10^{100} years and our Universe will cease to exist.

Contemplating the whole story of the Universe can make me feel both extremely humble and extremely grateful. Humble because of its immensity and the apparent irrelevance to the Universe as a whole about what happens here on Earth. Gratefulness because what happens here on Earth really doesn't matter much to the history of the Universe. The Universe will continue evolving regardless of Earth. Perhaps in some other planet system experiments in creation and evolution will produce

thinking life forms that do a far better job than humanity in taking care of their own beings, of beings of other kinds, and of their planet itself.

Creation of Life

At the formation of our Solar System from the ashes of Tiamat, the creation story narrows its focus severely from the Universe to Earth. This, obviously, constitutes a narrowing of our thoughts so that we can perceive more detail.

By measuring the radioactive decay of uranium atoms in primitive meteorites, we now know that the solar system formed quite quickly by condensation of gas into fine dust 4.567 billion years ago (Bya), to an accuracy of within 2 million years. Over the next million years, the dust condensed into larger aggregates that became the sun, the planets, asteroids, comets, and meteors. The next 10 to 100 million years saw much less frequent collisions, but a massive one about 4.2 Bya, with an asteroid or small planet sometimes called Theia, ejected the Moon from Earth. The collision probably caused the 23.5º tilt in the Earth's axis (with respect to the plane of the solar system) thus giving us the seasons of the year. At this time Earth was separating its heavy iron core from its lighter silica-based crust, and the first rocks were forming.

By 4.0 to 3.5 Bya , though still wracked with volcanic and tectonic activity, Earth had cooled to 60-70ºC, allowing water to condense into oceans and for the first bacterial life to create itself. Swimme and Berry give the mythic name Aries to this first living prokaryote, a single cell with DNA and cell walls but no cell nucleus. Atmospheric carbon dioxide was relatively abundant in those days, and about 3 billion years ago blue-green algae (Cyanobacteria) learned how to use solar energy to combine carbon dioxide with water to make carbohydrates for food. They had invented photosynthesis, the process that all nature uses today as its primary energy source, and which humanity with all its science has not come close to artificially duplicating.

Photosynthesis had one really bad side effect. It produced a toxic substance as a waste product. That toxin accumulated and accumulated and accumulated in the atmosphere until it created a major survival crisis. Ultimately some organisms learned how to absorb this toxin and combine it with carbohydrates to get energy. The process is called respiration and the toxic substance was oxygen!

It took another billion years for living cells to confine their DNA to a cell nucleus and become eukaryotes. By 2 Bya this allowed multi-cellular organisms and sexual reproduction. All this wonderful development was further aided by symbiosis as certain forms of bacteria became synergistically incorporated into larger cells as mitochondria, where respiration happens, and as chloroplasts, where photosynthesis happens in plants. These built-in bacteria are still with plants and animals today, reproducing independently of DNA and sex, and maintaining life by

carrying out the two basic processes of photosynthesis in plants and respiration in all plants and animals, including each of us.

By 1.5 Bya, the basic chemical processes of life had all been invented. Evolution changed from development of functions to development of forms. The next billion years saw the creation of multi-cellular organisms, with differentiated cells and complex body structure: fungi, worms, plants, arthropods, and at 500 million years ago (Mya), the first vertebrates. Plants and animals finally moved out of the seas onto land.

For the most recent 500 million years of Earth history, the geologic record is complete enough that we can evaluate quantitatively the variety of forms of life, of species. The record shows at least five times in that period in which over 50% of all animal species died. The first great extinction occurred about 440 Mya at the end of the Ordovician period and was followed by rapid development of higher plants and insects. The second extinction at 360 Mya at the end of the Devonian triggered development of reptiles and amphibians. The third at the end of the Permian and the beginning of the Mesozoic era 250 Mya apparently allowed the rise of the dinosaurs to their lengthy time as the dominant form of land animal. By this time plate tectonics had smashed all the earlier continents into one supercontinent, called Pangaea. The fourth extinction at the end of the Triassic period about 200 Mya allowed development of birds and mammals, and by 150 Mya flowering plants or angiosperms. The famous fifth mass extinction at 65 Mya ended the Mesozoic Era, killed off the dinosaurs, and allowed mammals to inherit the Earth. Based on a worldwide layer of iridium-containing dust around the world, we know that this extinction was caused by an asteroid impact on the Yucatan coast, which created the Chicxulub crater and lots and lots of atmospheric dust. It now seems that each of the previous major extinctions was also connected to large meteor impacts. *Continuing creation on Earth seems to require external force to really keep it going.*

The history of mammals is the history of the past 65 million years. Although Earth has been beset by climate change and ice ages for much of its history, it is the most recent ice age, the Pleistocene of the past 2.5 million years, with which we humans are intimately connected. The first humans, the first of genus *Homo*, evolved from Pithecine apes only about 2 Mya. *Anthropology has a lot of fun ascribing various skeletal parts to various Pithecine and* Homo *species, but in some ways it really doesn't matter very much exactly what species developed into what other species and what species died off without reproducing.* Earlier *Homo* species evidently developed use of fire, and probably of language. *(This depends on how language is defined. Many other species may have languages; dolphins, whales, crows, and blue jays have wide ranges of expressions that carry meaning. Just because we don't understand them doesn't mean they don't have a language.)* By 200,000 years ago individuals we now recognize as our own species, *Homo sapiens*, were roaming central Africa and ultimately spreading around the world. By 10,000 years ago the last

ice age *(so far)* ended, agriculture and cities developed, and the problems of humanity versus Earth began. The history of humanity over the past 10,000 years has been told many, many times. Swimme and Berry tell it in "The Universe Story", Korten tells it in "The Great Turning", Eisler tells it in "The Chalice and the Blade". I will not retell it here.

The Twelve Miracles of Creation

The series of remarkable facts in the previous two sections are not the Universe Story. A creation story or myth needs to have some poetry to it, some simplification, that makes it memorable. The first chapter of the Book of Genesis is such a story. I don't claim any great power as a writer; nevertheless, here is my version of the new story of creation, told as a series of "miracles" produced by the continuing creative power of the Universe. I use Swimme and Berry's names for new forms of life.

1. *In the beginning the Universe burst into existence, instantly complete with the right set of physical laws to allow it to grow to magnificence.*
2. *In just a few seconds most of its original matter and anti-matter annihilated each other, leaving only the tiny excess of hydrogen and helium matter to continue.*
3. *Hydrogen fusing to helium, after gravity pulled the matter into stars, lighted up the Universe and the Sun that energizes our Earth.*
4. *Once an old star called Tiamat blew up into a supernova, creating all the heavier elements needed for our solar system, for life, and for our bodies.*
5. *The formation of Earth allowed the combination of oxygen atoms with hydrogen atoms to make water, so rare in the Universe, but so fundamental to life.*
6. *Earth was made of just the right elements at just the right distance from the Sun to allow renewal of the land surface by plate tectonics and retention of water in vast oceans.*
7. *Molecules of carbon, hydrogen, and oxygen in these oceans learned to combine and to reproduce themselves and became Aries, the first living cell.*
8. *Later Promethio created photosynthesis, combining carbon dioxide and water to make food and poisonous oxygen.*
9. *In order to live on an Earth polluted by oxygen, an organism called Prospero invented respiration, combining carbon molecules with oxygen to obtain energy.*
10. *The development of plants and animals began when Sappho learned to split and merge its DNA by sexual reproduction.*

11. *Many millennia later, a chance collision with an asteroid destroyed the dinosaurs who ruled Earth, and exposed the creative power of mammals.*
12. *Then, a mere moment of time ago,* Homo sapiens *developed at an amazing rate and became the first species to contemplate its place in the universe.*

With each of these twelve miracles the Universe has learned a new way to create itself, and there is no evidence that creation is done yet.

The Anthropic Principle

The laws of physics in our Universe include a small number of apparently arbitrary constants from which all other constants and property values are derived. Frank Wilczek's list ["On Absolute Units, III: Absolutely Not?" Physics Today May 2006 p. 10] includes the fundamental independent constants governing the electromagnetic, weak, and strong forces; the masses of the electron, the up quark, and the down quark; the mass densities of dark matter, dark energy, and baryons; and the amplitude of fluctuations in the early universe. Other physicists list different numbers of necessary but independent constants, from six to 26, each apparently having a single very exact value throughout the Universe. The names and number of these fundamental constants are not important here. What is important is that if any of their values were different by more than just a little, our Universe would be a very different place, or very possibly would not even exist.

The Anthropic Principle states that if the Universe did not have exactly the right values of these constants to have produced intelligent life on Earth, **we would not be here to measure them**. The Universe could have annihilated itself or re-collapsed. It could have expanded so fast it burned out rapidly. Atoms could never have formed or formed of vastly different elements. Gravity could have been too strong or the electromagnetic force too weak. In other words, a great many things could have gone wrong, but didn't. What this means for interpretation of the birth of the Universe has been hotly debated. For physicists, there is still hope of an as yet unknown theory of everything that will explain why the values have to be what they are. For mathematicians, it suggests hypotheses of continuous creation of an infinite number of universes, each with different laws and constants, most of which quickly disappear. For fundamental religionists it suggests intelligent design by an external force or being. *As for me, I am content to recognize the Big Bang and its consequences as very likely a forever unexplainable occurrence, which therefore commands my wonder, awe, and respect.*

The Gaia Hypothesis

In addition to the Universe having just the right laws for life, our own Earth also has just the right conditions for life. Since the development of photosynthesis and respiration to close a cycle between organic carbon and atmospheric carbon, and the storage of excess carbon and oxygen in limestone rock, Earth's atmosphere has remained remarkably stable and suitable. There is just enough oxygen for breathing and respiration, but not quite enough to cause everything to burn. There is just enough carbon dioxide and water in the atmosphere to keep the surface at an optimum temperature for life. There is enough stratospheric ozone to absorb most of the devastating ultraviolet radiation from the sun. Earth's surface life and atmosphere seem to operate to protect long-term stability; such a self-regulating process is called homeostasis.

James Lovelock forcefully argued that Earth acted as if it were a single living organism in his 1979 book "Gaia: A New Look at Life on Earth". He named this apparent organism after the Greek Earth goddess, Gaia, a suggestion first made by William Golding. In Lovelock's sense, Gaia encompasses the negative and thus stabilizing feedbacks between Earth's life and its global environment. David Schwartzmann remarked that Gaia is the metabolism of the biosphere. Together with microbiologist Lynn Margulis, Lovelock has pointed out the importance of microbes in creating homeostasis. Earth was homeostatic when there were only single-celled organisms; they created the conditions for multi-cellular life. Single-celled organisms invented photosynthesis, respiration, fermentation, nitrogen fixation, even DNA and genetics. Because chloroplasts in plants and mitochondria in plants and animals are just incorporated bacteria, bacteria still produce most of the chemical transformations that create homeostasis. Our own dry weight is 10% bacteria, without which we would die.

The Gaia Hypothesis has generated a great deal of controversy. Some of this resulted from taking the "living organism" concept too literally. Some has been based on details of biosphere science and on debate about the physical conditions of early Earth. Some has stated that the concept is overly reductionist by concentrating on physics, chemistry, and microbiology to the exclusion of multi-celled life. The Gaia hypothesis says nothing about the development of animals and plants in all their fantastic variety of form and behavior, and thus has been called spiritually bereft. On the other hand, Gaia invites thinking of "the living Earth", *which, for me at least, equates to "the living God" so much needed by humanity*.

Gaia as a living organism may not necessarily be a scientific fact, though this has been vigorously argued, but the concept is a unifying story of explanation, and thus a myth of a holistic, evolutionary Earth. Our Earth is finely-tuned for life and that tuning was initiated, if not necessarily continued, by single-celled organisms. We humans had

nothing to do with this tuning, but we have developed the power to destroy it. One can argue whether humanity has the capability to destroy ALL life on Earth, or if the microbes will survive, *but it really doesn't matter*.

Lessons From The Story

Just like other creation myths, the Universe Story has many lessons to teach us. This section introduces subjects that arise from The Story and that help to enlighten us about the origin and meanings of existence: randomness and predictability, reductionism and holism, linearity, cycles, and the continuity of life.

Randomness and Predictability

Philosophers and religionists have debated for thousands of years the role of randomness or chance in existence. Is the variety we find among astronomical objects the result of random or directed processes? Is the variety we find among life on Earth the result of random or directed processes? Is what happens to us each day the result of random or directed processes? If the Universe Story teaches that all physical/chemical laws were established in first fraction of a second and have remained unchanged since then, does this mean that everything since has been predetermined by the arrangement of quarks and energy at the moment of creation? Or, on the other hand, does our knowledge of quantum uncertainty (the inability to specify exactly both location and velocity of the structural components of atoms) mean that everything in the Universe is completely unpredictable?

The Universe did effectively start off with very small variations in density that have since developed over many orders of magnitude to become all the great variety of the Universe today. But even if we knew exactly the original location and velocity of every quark, we could not PREDICT the current Universe without having a quark-based computer as big as the Universe and running it for as long as the age of the Universe. In other words, it would take a second identical Universe to predict the present one. This makes a mockery of the word "predictability". Another argument, *which borders on pseudo-science*, extends the quantum Uncertainty Principle of physics to claim unpredictability at all space scales. *The reality of predictability or unpredictability in the Universe, as in so much else in ECOSHIFT, lies along a continuum, not in the extremes. We can use the laws of science to make general statements about the behavior of the whole Universe, or specific statements about the behavior of specific parts, but we cannot make specific statements about the whole Universe. There is partial predictability, and partial unpredictability.*

Then what role does randomness or chance play? One answer involves a description of "chaos" in its scientific/mathematical sense.

Chaos or chaotic behavior occurs when a completely predictable, or deterministic, process gives apparently unpredictable or random results. For me this is best expressed by the simple iterative "logistic map" equation: $x_{n+1} = r\ x_n\ (1 - x_n)$, where r is a constant. The equation is used repeatedly, each time replacing the x_n value with the value of x_{n+1} to get a new x_{n+1}. For any initial x between 0 and 1 and r between 3.57 and 4.00 this simple equation exhibits unpredictable chaotic behavior in successive x values. The results do not repeat in any pattern. You can test this with a simple spreadsheet. Other expressions of chaos are when a very small change in initial conditions makes a huge difference at a later time (the classic case is the concept that a butterfly can generate a hurricane), and the threshold effect (such as walking off a cliff). A major threshold effect may occur if global warming suddenly causes the Gulf Stream to shut down. Natural systems are inherently so complicated that we can never understand them completely, thus chaotic, butterfly, and threshold effects may be effectively unpredictable even though true randomness is not involved.

Reductionism and Holism

For several centuries, science benefited by the so-called reductionist or mechanistic method, in which processes, organisms, and machines are broken down into smaller and smaller component parts. Such science assumes that the whole is only the sum of its component parts, so that actions at all levels can ultimately be explained by interactions at the atomic and elemental level (or further, by quarks). This method effectively assumes that everything is predictable. And it worked – to some extent. We learned an amazing amount about Earth and the Universe in only 400 years. But something was missing. Science found itself no nearer to explaining consciousness and the mind or the complexities of natural ecosystems.

In the past several decades, science has been forced to recognize that the whole often **is** greater than the sum of its parts. In order to go further in understanding how things work, we needed to put the pieces back together and look at the whole body or the whole ecosystem. We needed to be holistic, not reductionist. We needed to recognize the existence of "emergent" properties, that is, behavior that only occurs above a given space scale. For instance, the concept of "ice" has no meaning at the scale of single molecules. Language and thought only arise at higher levels of organization of living cells. Life itself is an emergent property that is not explained by fundamental laws and properties of physics and chemistry. Holism and emergence combine with chaos, butterfly, and threshold effects to tell us that we can never hope to explain and quantify everything. There must be limits to our knowledge and our capabilities, and *we must recognize these limits lest we remain insolent with respect to nature and Earth.*

Science has been criticized for the lack of spirituality inherent in reductionism and for lack of conscience/consciousness. Some of this criticism arises from failure to differentiate science from scientists. Science tries to be objectively concerned with knowledge about how things work. Scientists have often expressed ethical concerns about whether things ought to be allowed to work. The highly influential Union of Concerned Scientists formed in 1969 with the goal of shifting federal research from military technology to environmental and social problems. Scientists have raised political awareness of the adverse effects of pollution, acid rain, and ozone destruction. In 1990, 32 famous scientists felt compelled to send "An Open Letter to the Religious Community" calling attention to human destruction of Creation and urging religious leaders to get involved.

Linearity, Cycles, and the Continuity of Life

Cultures and religions differ about whether they conceive of time as cyclical or linear. The Universe Story teaches that time is linear and that continuing creation is a sequence of one-time creation events such as those in the Twelve Miracles above. But the Story also teaches the importance of cycles and recycling. Our Sun is at least a third generation star; if it were not, heavy elements would be lacking and life on Earth would not exist. Our atoms have been reused countless times before and after creation of Earth and of life. Each breath we take includes atoms breathed by every human before us, by all kinds of prior life forms, and by non-living entities such as rocks and stars. Each of us is 61% oxygen, 23% carbon, 10% hydrogen, 3% nitrogen, 1% calcium, 1% phosphorous, and 1% of lots of other elements. Virtually every atom in our bodies is replaced every year. Truly we are each connected to the Universe through this recycling process. Time is both linear and cyclical.

Life does not begin anew in each individual organism; it continues. In asexual reproduction new organisms are created by simple cell division. In sexual reproduction, new organisms grow from two living parent cells that merge themselves and their DNA. *Since the very first living cells were formed, no new life has been created; it is just one life continually passing on by division of living cells.* As far as we know, new life has not been created from non-living matter for 4 billion years. Although the life of a sexual organism always ends in death, there is no creation of new organisms from death. New organisms always arise from the passing on of life from their parents. ALL of the ancestors of each of us were magnificent in successfully passing their life on to us. The metaphor of the "tree of life" connotes the continued passing of life from one source through an increasing number of branches that grow longer and more complex.

However, we also need to acknowledge and honor that most twigs and branches of the tree have died and that most individuals of species from asexual microbes to Sequoias **die before they can reproduce**. Each living

organism is capable of producing dozens to millions of offspring. But whenever organisms produce an average of more than one reproductive offspring, the population of that kind of organism grows and eventually **must** exceed (overshoot) the resources that its ecosystem can supply. Overshoot results in a rapid decline in population, usually followed by recovery and ultimately another overshoot. If recovery from decline fails because reproductive rate remains below an average of one reproducing offspring per parent, the population eventually becomes extinct. Only with an average of exactly one reproducing child per parent can a stable population be indefinitely maintained. The implications for the Population chapter are obvious

As the Universe Story tells, our basic life processes are shared with all life forms and were originally created by single-celled organisms. Many of the genes in our DNA we have in common with those organisms. Many more genes encode for characteristics of vertebrates: bones, skull, arms, and legs. When we get as closely related as we are to chimpanzees, 98.6% of our DNA matches theirs. This is such a small difference that scientists can argue there really is no difference between genus Pan and genus *Homo*; the separation may be more anthropocentric than scientific.

The Story also tells of the wonders of evolutionary similarities and differences. Convergent evolution describes organs that have developed more than once in the Story. Wings developed independently in insects, birds, and mammals; obviously flying has important advantages. Eyes have developed independently at least 40 times and in a bewildering variety; seeing clearly is an advantage (pun intended)! On the other hand, many species have developed senses that humans, with all our hubris, lack: whales sense low frequency sound waves, bats sense high frequency sound waves; birds sense Earth's geomagnetic field, bees have ultraviolet vision, pit vipers and insects sense heat, and plants and insects have superbly discerning chemical sensors. These are all our relatives; somewhere back there we have common ancestors. And they are all wonderful.

> "There is a tension in my attraction to the infinite.... I am the sky, I am the rock, I am the pine.... At the same time I exist in the limits of who I am, distinct from all other beings and forms of matter....The sense of unity with this rock, with these trees, speaks to me. These are my relations. ... But the unity is only part of the truth. The yearning for unity arises from the debilitating experience of fragmentation. The complementary pull is to relationality, to mutuality.... In and out, the dance of limits and limitlessness, the movement of unity and relationality." [Stephanie Kaza, "The Attentive Heart", p. 235-236.]

The Universe Story contains all other stories because all stories are part of the creation of the Universe. The Story teaches that diversity, variation, difference, change, and relationships are how the Universe operates. It teaches that death is no less sacred than life. In fact, death is **required** to make room for new cycles of life. It teaches recycling at all scales, and that **every thing** really is connected to everything else. It teaches that we are all related and have the same history, both animate and inanimate, living and dead, rapid- and slow-changing. In the words of Thomas Berry "The capacity for bonding of the components of the Universe with each other enables the vast variety of beings to come into existence in that gorgeous profusion that we observe about us." Connie Barlow adds: "The stream of stars blinking on, blinking off, and the living stream of organisms coming into existence, going out of existence, is beyond judgment of good and evil. It is, rather, magnificent. It is sublime, precious, and exceedingly worthy of reverence" ["Green Space, Green Time", p. 28].

The Sixth Extinction and the Future

The sad thing about the uniqueness of humanity and the Universe Story on this planet is that we are now in the midst of a great extinction event comparable to the one caused by an asteroid 65 million years ago. Only this time we humans are causing it. This extinction probably started 12,000 years ago with human over-hunting of Pleistocene large mammals. It has continued and become more intense since then as humanity has overrun Earth and altered all of its formerly natural ecosystems. Without getting into discussion of the rate at which humanity is causing other species to become extinct, we need only to accept that the rate is unacceptably large.

On the other hand perhaps the sixth extinction, as the previous five, will provide new evolutionary opportunities. Lynn Margulis and Dorian Sagan point out that:

> "From the paramecium to the human race, all life forms are meticulously organized, sophisticated aggregates of evolving microbial life. Far from leaving organisms behind on an evolutionary 'ladder', we are both surrounded by them and composed of them. Having survived in an unbroken line from the beginnings of life, all organisms today are equally evolved" ["The Microcosm", Wild Earth, Fall 2000, p. 12].

The Gaia concept implies that microbial self-regulation of the biosphere means great resistance to change and resilience in response to change. So no matter how humanity treats Earth, the biosphere probably

will survive a major loss of diversity of multi-cellular plants and animals, and will ultimately create a whole new panoply of life forms.

Even if species extinction were not happening, we humans need to consider how we are affecting the evolution of every other species on Earth, from elephants and whales to the smallest microorganisms. Is humanity so great that we deserve to skew evolution on Earth, which as far as we know is the only place in the Universe where life exists at all? The answer depends on one's belief about whether humanity is the pinnacle and purpose of Creation or of a Creator, or whether humanity will ultimately be superceded by creation of some other, hopefully more beneficent, species. This is the crux of the difference between anthropocentrism and ecocentrism.

The average length of time that any one species exists is roughly 2 million years, though a given genus can exist for much, much longer. *Homo sapiens* has only been around for 200,000 years, so we are still a young species. In many ways we are far younger than that. We have only learned the universal laws of physics and chemistry in the past 400 years, and have only seen Earth as a whole, from space, for a mere 40 years. Relative to the history of Creation on Earth, change is now happening unbelievably fast. Where do we think we and Earth are going, and what will Earth be like a mere thousand or million years from now? Duane Elgin, in "Awakening Earth" contemplates the possible futures of humanity, including its evolution into a new species.

So we can view the current situation either optimistically or pessimistically. Optimistically, now may be seen as the end of the Cenozoic Era and the beginning of an Ecozoic Era in which humanity learns to live within the confines of Earth's support systems. Or pessimistically, the sixth extinction could include humanity as well as many other life forms, in which case it will probably be quite a while before anyone cares what the new era is called!

The Conscious Universe

In 1812 Percy Bysse Shelley wrote "I am the eye with which the Universe beholds itself and knows itself divine." Carl Sagan said "We are star stuff pondering the stars." Teilhard deChardin wrote "Humanity is the universe becoming conscious of itself." Thomas Berry has amplified inspirationally on deChardin's statement in his various essays and books.

Although the Universe is an immense place, full of unbelievable variety of planets, stars, and galaxies, there is, as far as we know, only one place in the Universe where creative evolution has produced beings who can contemplate the Universe as a whole, with its fascinating and enigmatic history. That place is Earth and the beings are humans.

We have searched for signs of life elsewhere in our own solar system, most directly by landing spacecraft on Mars. The Search for Extraterrestrial Intelligence program has listened in some parts of the

electromagnetic spectrum for signals from nearby stars that might indicate intelligent life. Our own electromagnetic signals have reached into space at the speed of light, but have not yet elicited any response. We have argued the probabilities that life has also arisen elsewhere in the Universe, but we have so far found nothing. Several decades ago, statistical arguments based on billions of stars in each of billions of galaxies suggested that life-forms are probably common in the Universe. *I suspect, but no one knows, that the Universe harbors lots of other beings who also have the capability to reflect on their own universe stories.* But more recently, the improbabilities of the Earth-based Miracles described above have been used to argue against an abundance of life. Another recent argument suggests that technological cultures such as ours burn up fossil carbon energy sources and disperse mineral elements so quickly that such a civilization, like ours, can exist only for a very, very brief period of time on any given planet. So just because we don't find artificial electromagnetic signals from nearby stars now, doesn't mean that planets around them did not go through our current phase in the past. In spite of the many reports of alien spacecraft, there is no hard evidence that any were real; in fact, the wide variety of such reports argues against interaction with any particular group of aliens. Earlier in this chapter I pointed out how slowly our own spacecraft are moving toward other stars and thus how unlikely we are to ever use interstellar space travel. What all this means is that for the foreseeable future, and maybe forever, life on Earth will not interact with life anywhere else in the Universe. That puts us in a unique position.

As far as we know, humans are the only life form that can contemplate the Universe. Primack and Abrams, in "The View from the Center of the Universe" put humanity at the center of Creation, both in space and time. Connie Barlow writes "For Wilson, ..., humankind is *life* become conscious of itself. For Huxley, humankind is *evolution* become conscious of itself. But for Berry, humankind is the *universe* become conscious of itself (ital. au.)" ["Green Space, Green Time", p. 53]. Humanity is the Universe becoming self-aware. Each of us is the consciousness of the Universe. Each of us plays an active role in Continuing Creation. What I do influences people and things around me and makes change. *I am a creator!* What ethical responsibilities do I therefore have? That is the subject of the remaining chapters.

Deep Ecology: An Ecocentric Worldview

"Perhaps the most widespread evil is the Western view of man and nature. Among us, it is widely believed that man is apart from nature, superior to it; indeed, evolution is a process to create man and seat him on the apex of the cosmic pinnacle. He views the earth as a treasury that he can plunder at will. And, indeed, the behavior of Western people, notably since the advent of the Industrial Revolution, gives incontrovertible evidence to support this assertion." – Ian McHarg

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"There is no word for 'nature' in my language. Nature, in English, seems to refer to that which is separate from human beings. It is a distinction we don't recognize." – Audrey Shenandoah, Clan Mother of the Onandaga Nation.

"We need another and a wiser and perhaps a more mystical concept of animals.... They are not brethren, they are not underlings, they are other nations." – Henry Beston ["The Outermost House"]

Respect for Animals

Both ancient and modern hunter-gatherer cultures demonstrate great respect for non-human beings. When animals are killed for food, various rituals express thanks to the animal and its spirit. Such cultures recognize the limits of their environment to provide such food and do not overhunt or overfish and do not leave any part of a killed animal unutilized. Other environmental components involving food and raw materials are also respected. Worship of soil, rain, and sun recognizes their great importance to tribal life. Many books have explored these intimate relations between human groups and nature , including Gerry Mander's "In the Absence of the Sacred" and Thomas Berry's "The Dream of the Earth".

The thread of human concern for nature runs throughout history. For millennia Jains in India have placed animals, and indeed plants and inanimate objects, on the same level as humans (see the Ecospirituality chapter). Early Christianity had its St. Francis of Assisi, who preached the equality of all creatures. "Charismatic megafauna" (see the Conservation Biology chapter) attract humanity to create masks and rituals, to mount stuffed heads on walls and skins on floors, and to swim along with marine mammals. The poets of the romantic period early in the 19th Century praised nature and landscapes, initiating the genre of "nature writing", and leading to many well-known books such as Edwin Way Teale's series "The American Seasons" and Annie Dillard's "Pilgrim at Tinker Creek". But over the past several decades nature writing has moved beyond descriptions of the wonders of nature to concern for the protection of nature.

At the beginning of "Hayduke Lives", Edward Abbey describes the death and burial of a desert tortoise by a yellow monster bulldozing a road to a huge new open pit mine. The sympathy of the writer greatly favors the tortoise over the bulldozer and the people behind it (both literally and figuratively), and over the usefulness of the mine's production to yet more people. In "Sand County Almanac" Aldo Leopold questioned human dominance over, and yet ignorance about, natural systems and the beings that make them work. His famous statement – "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise." – provided an early rallying cry for the ecocentric movement. Other writers, like Barry Lopez in "Arctic Dreams", and Terry Tempest Williams, have fostered increased respect for wild animals and the ecosystems in which they exist.

Most animal rights activists wish that humans would never kill animals and never treat them with disrespect. The well-known organization People for the Ethical Treatment of Animals asserts that:

> "Animals Are Not Ours to Eat
> Animals Are Not Ours to Wear
> Animals Are Not Ours to Experiment On
> Animals Are Not Ours to Use for Entertainment
> Animals Are Not Ours to Abuse in Any Way."

While these goals are admirable, they raise some ecocentric questions. As we will see below, deep ecologists, who form a core group of Ecoshift, extend inherent value and rights to plants and inanimate objects as well as to animals. The Universe Story does not ascribe a higher level of being to animals than to plants or microbes. *As a plant-lover, I don't recognize a distinction between animals and plants with respect to inherent rights. If we accept an argument that animals are a "higher" life form than plants, then it becomes easy to argue that humans are "higher" than both.* My late co-worker Alex Shigo became well-known for his publication "A Tree Hurts Too" about wound responses in plants.

Theodore Roszak articulates another point-of-view in "Voice of the Earth" [p. 250] saying that "there are environmental militants (like some in the animal rights movement) who assert the equal right of every species to life, a position not apt to find widespread endorsement among the hungry many where their interests clash with bird or beast." Heifer International insists that meat is necessary to prevent starvation for millions (or even billions) in the poverty-stricken third world. The Food chapter of this book does not argue that everyone should be completely vegetarian, but does encourage much less meat for the affluent. With respect to clothing also, we can argue whether an animal skin on a native of the jungle or the tundra is a greater crime against Creation than the harvest of vast acreages of cotton to provide closets full of clothes for the affluent billion.

The Arrogance of Humanism

The thread of respect for nature is only one small thread in the whole cloth of history. Somewhere along the way the vast majority of humanity lost this respect for non-human beings and the natural systems in which they thrive. Arguments abound about whether agriculture, urbanization, religion, industrialization, science, or whatever, began and fostered the process. But from the 17th century through the 20th century, so-called "Western" thinking, whether "Christian" or "humanist", spiritual or secular, dominated world cultures, world economics, and world politics. This thinking is clearly anthropocentric, and believes that Earth and everything on it belongs to those humans who can do whatever creates the most power and money.

In 1967, at the beginning of the environmentalist surge of the 1970s, Lynn White wrote his famous and controversial essay "The Historical Roots of Our Ecological Crisis" [Science 155: 1203-1207], which can be summed up in one quote:

> "In Antiquity every tree, every spring, every stream, every hill had its own genius loci, its guardian spirit.... Before one cut a tree, mined a mountain, or dammed a brook, it was important to placate the spirit in charge of that particular situation, and to keep it placated. By destroying pagan animism, Christianity made it possible to exploit nature in a mood of indifference to the feelings of natural objects."

By the latter half of the past millennium, Christianity and its relatives Judaism and Islam, placed humans just below God and well above animals and all other organic and inorganic objects, which were here only to serve humanity and thus God.

In the late 1970's, David Ehrenfeld furthered the controversy by describing "The Arrogance of Humanism". He defined humanism as a fundamental belief that humanity is capable of solving all its problems, and

stated that, whether recognized or not, humanism is the dominant "religion" of humanity. Ehrenfeld added [p.17] to this basic belief with:

> "Many problems are soluble by technology.
> Those problems that are not soluble by technology, or by technology alone, have solutions in the social world (of politics, economics, etc.)
> When the chips are down, we will apply ourselves and work together for a solution before it is too late.
> Some resources are infinite; all finite or limited resources have substitutes.
> Human civilization will survive."

Humanism adds to anthropocentrism an overweening optimism about the abilities and future of humankind. It includes faith in human reason, faith in human perfectibility, faith in human science and technology, faith in human ability to dominate and control our environment, and faith in human power. This optimism now drives global culture regardless of whether humans are believed to be at the top of the Universe's power pyramid, or are just one step "under God". Humanism refuses to recognize that there are, and may always be, limits to our control and to our knowledge. The arrogance of humanism has led to the immense problems of globalization, social Darwinism, and the consumer culture documented throughout ECOSHIFT.

Hubris in 1961

Just as I began to write this chapter and to reread Ehrenfeld, I received a "scrapbook" packet from an old friend of my parents. In it was a copy of the commencement address delivered by Dr. Fred L. Whipple to Northeastern University in 1961. Fred was a good friend of my family and a well-known astronomer famous for his "dirty snowball" description of comets. His speech was a reflection of the times. He said: "New energy sources for human use will make fossil fuels, such as oil and coal, seem like match sticks in a forest. By hydrogen fusion our oceans will eventually become power sources wherein pounds, or even ounces of water, more than equal a ton of coal. Medical progress will conquer essentially all diseases except one that is universally fatal, old age.... I believe we can, if we choose, make this planet support 100 to 1000 times as many people as now live on it and this in comfort and security, if not in larger living areas."

Just 17 years later, Ehrenfeld wrote "The popular idea of 'clean fusion power' is a myth that encompasses every environmental delusion and folly of which this humanistic attitude is capable" ["The Arrogance of Humanism" p. 116]. Now, almost 50 years later, fusion power is as distant as ever, we fear that disease-causing microorganisms are mutating faster than our ability to defend against them, and more people are starving than ever before.

Ehrenfeld, as many others before and after, urges that "reason" must be tempered by human emotion or feeling. Reason, and consequently "science" and "technology", became the favored mode of human decision-making about 400 years ago. But use of reason usually depends on various unstated assumptions. Thus Ehrenfeld argues that "a clever person can use reason to support any course of action that he or she fancies - it takes decent *feelings* to pick the right one (ital. au.)" [p. 146]. An alternative statement was once made by my friend Louise Tritton - "Science can not make political decisions." *Knowledge, elucidated by reason and science, may be necessary, but is insufficient to support or justify ethics, cultural, or social choices. Reason cannot differentiate right from wrong.* Ehrenfeld continues [p. 163]: "emotion is an integration and summarization phenomenon." This leaves us with a need to develop emotions, feelings, and faith to blend with the scientific reason of the Universe Story.

Arne Naess and Thomas Berry

While many environmentalists were making great headway through the 1970s and 1980s cleaning up pollution and protecting endangered species, a few visionaries saw that these efforts insufficiently addressed the basic problems and thus could not change fundamental human behavior. Fritjof Capra, in "The Turning Point", criticized the paradigm of rational, linear, reductionist science and technology, blaming it for many of the ills of society, and argued the need to bring emotion, intuition, and holism back into the worldview of humanity. This is the argument that we had moved too far to the left side of the table in the Great Turning chapter, and needed to swing more to the right side. On p. 16 Capra says: "what we need, then, is a new 'paradigm' – a new vision of reality, a fundamental change in our thoughts, perceptions, and values". He was one of the first to describe the "paradigm shift" that was already beginning by 1980, but had not yet been recognized.

At the same time, Norwegian philosopher Arne Naess originated a philosophy that he called "deep ecology". This name highlights its difference from "shallow" environmentalism based on anthropocentric values, and brings in the holism that underlies ecological science. Naess carried the concept of respect among humans through respect for other living beings to respect for Earth's life support systems. Thomas Berry, a Catholic priest, helped to popularize deep ecology concepts in his various books, including "A Dream of the Earth" and "The Great Work". George Sessions, Bill Devall,

John Seed, Joanna Macy, Alan Drengson and others have further developed the concepts of deep ecology and its near synonym, ecocentrism.

> "Deep ecology encourages a fundamental shift in the way we experience nature and how we respond to the environmental crisis. Deep ecology rises from a belief in the essential value and interdependence of all forms of being. Supporters of deep ecology are committed to minimizing humanity's destructive interference with the rest of the natural world and to restoring the diversity and complexities of ecosystems and human communities. The deep ecology vision promotes practices to help change old patterns of thinking and acting. It reconciles us with the larger natural world that is our home.
>
> This philosophy has risen in popularity in part because it questions the aims of many environmental movements that are popular now. Basically most environmental movements have taken as their base the value of nature to humans. Deep Ecology rejects this and asserts that rather than seeing nature as valuable to humans we should see nature as valuable in and of itself. This, many deep ecologists believe, means that as a world society we must alter our idea of our relationship to nature as well as our relationships with each other." - Attributed to a "Center for Deep Ecology" on a dead web page

My own one sentence definition of deep ecology reads: All species of living beings and all kinds of non-living beings have equal inherent rights to participate in Continuing Creation on Earth. This statement derives from a growing recognition that Earth may be more unique in the Universe than we thought decades ago. As far as we know **and may ever know**, life on Earth is a unique manifestation of the creative power of the Universe. This scientific fact remarkably does not disagree with the teachings of many religions through the ages. Deep ecology recognizes that any **species** of plant or animal only survives about 2 million years before it evolves into something else, and that this is a very short time relative to Earth's age. Deep ecologists also recognize that non-living beings evolve too: mountains, rivers, soils, deserts, glaciers, oceans, and continents. Recognition that evolutionary creation continues, albeit very slowly from our short-term viewpoint, leads to understanding that humans are currently having far too much impact on Earth's creative processes. Thomas Berry writes:

> "The true, fundamental relationship between humans and the natural world is one of wonder, beauty, and intimacy.... We need to assert that there is a single community of life on Earth, and that community lives or dies together. Every being has three rights: the right to be, the right to habitat, and the right to fulfill its role in the ever-renewing process of Nature" [Wild Earth, Summer 2000, p 93].

The Eight Points of Deep Ecology

In 1984 Arne Naess and George Sessions, "during a camping trip in Death Valley", summarized or codified deep ecology thinking into Eight Points. Naess later called these "a set of fairly general and abstract statements that seem to be accepted by nearly all supporters of the Deep Ecology movement." In "Deep Ecology for the 21st Century" [p. 68], edited by Sessions, Naess lists the Points as follows:

1. "The well-being and flourishing of human and non-human life on Earth have value in themselves (synonyms: intrinsic value, inherent worth). These values are independent of the usefulness of the non-human world for human purposes.
2. Richness and diversity of life forms contribute to the realization of these values and are also values in themselves.
3. Humans have no right to reduce this richness and diversity except to satisfy vital needs.
4. The flourishing of human life and cultures is compatible with a substantially smaller human population. The flourishing of non-human life *requires* a smaller human population (ital. au.)
5. Present human interference with the non-human world is excessive, and the situation is rapidly worsening.
6. Policies must therefore be changed. The changes in policies affect basic economic, technological, and

ideological structures. The resulting state of affairs will be deeply different from the present.

7. The ideological change is mainly that of appreciating life quality (dwelling in situations of inherent value) rather than adhering to an increasingly higher standard of living. There will be a profound awareness of the difference between bigness and greatness.
8. Those who subscribe to the foregoing points have an obligation directly or indirectly to try to implement the necessary changes."

Stan Rowe, quoted on the Ecospheric Ethics web site, has proposed altering the first four Points from a biocentric to an ecocentric perspective:

1. "The well-being and flourishing of the living Earth and its many organic/inorganic parts have value in themselves (synonyms: intrinsic value, inherent value). These values are independent of the usefulness of the nonhuman world for human purposes.
2. Richness and diversity of Earth's ecosystems, as well as the organic forms that they nurture and support, contribute to the realization of these values and are also values in themselves.
3. Humans have no right to reduce the diversity of Earth's ecosystems and their vital constituents, organic and inorganic.
4. The flourishing of human life and culture is compatible with a substantial decrease of the human population. The creative flourishing of Earth and its multitudinous nonhuman parts, organic and inorganic, requires such a decrease."

Rowe argues that the phrase "except to satisfy vital human needs" in the original third Point allows continued reduction of diversity as long as human population continues to grow. Rowe prefers to state maintenance of diversity as an absolute and asserts that it can only be satisfied with a human population of less than one billion (see the Population chapter).

Rights, Worth, and Hubris

Reading the Eight Points without lots of introductory and background material can produce a strong negative reaction. The Points seem anti-human. How can non-human life be as important as human life? Satish Kumar, long-time editor of the wonderful magazine Resurgence, prefers the term "reverential ecology" to deep ecology. He says that deep doesn't necessarily mean good, and that some deep ecologists put other-than-human

life too much ahead of human life. Additional controversy surrounds the issue of giving "rights" to the other-than-human. Peter Seidel in "Invisible Walls says that "rights" are a human invention anyway and do not exist in nature. He goes on to say that the concept of rights is based on selfishness. And Baird Caldecott says "To extend rights to wild animals would be in effect to domesticate them."

Yet legal questions must be answered, such as the right of marine mammals to remain free from adverse effects of active sonar testing (creation of sonar waves to detect submarines). In January 15, 2008 President Bush exempted the U.S. Navy from meeting provisions of the Coastal Zone Management Act and the National Environmental Policy Act. Though many unanswered scientific questions remain, some courts have supported the rights of mammals to be free from such damaging sound waves. But in November 2008, the U.S. Supreme Court ruled (7-2) that national "defense" supercedes the rights of whales and dolphins to a life free of endangering noise.

At the height of the 1970's when clearcutting was a major environmental issue, Christopher Stone wrote a seminal book titled "Should Trees Have Standing?", which was reissued in 1996. The question involved whether trees should have legal rights. One principle of the Forest Guild, an alternative association of professional foresters, is "The forest has value in its own right, independent of human intentions and needs." Recently, a group of Midwestern loggers sued the U.S. Forest Service for violating the First Amendment by ruling in favor of environmentalists about timber sales. The loggers claimed that environmentalists are deep ecologists, and deep ecology is a religion, so ruling in their favor is favoring one religion over another. *Maybe they are partly right.*

In Green Space, Green Time [p. 244 ff.] Connie Barlow engages herself with an anthropocentric devil's advocate over the question of whether the Mexican gray wolf should be reintroduced into the wild. She begins by stating "these four credos mean that, for me, the pageant is sacred, the diversity of life is sacred, bioregions are sacred, Gaia is sacred." When asked why biodiversity is sacred, she replies "Biodiversity is sacred because it is my religion to believe so." Deep ecology is a spiritual issue, not a scientific one.

The Eight Points in fact eschew the word "rights" in favor of "intrinsic value" or worth that does not arise from any relationship to humanity. The term "rights" is reserved for "human rights", which appear to be self-ordained. Inherent worth differs from usefulness. Species **need not** play a large role in an ecosystem in order to have value, and certainly do not need to have any benefit to humanity. Many deep ecologists extend the concept of inherent worth beyond other living species to all "entities", such as rocks, landscapes, rivers, mountains, and the ocean. Such entities, too, deserve to develop in their own ways, free from human interference. Jeffrey A. Lockwood ["Good for Nothing", UUWorld, May/June 2001, p. 31] provides my favorite quote: "The problem is that nature doesn't exist for us, ecosystems don't care about us, animals don't generally love us, and the universe doesn't

really need us." *What humanity needs is a good dose of humility rather than our current overdose of hubris.*

For those who still want to put humanity first, I ask: is there any difference between a self-proclaimed "superior" species destroying other species as it chooses and a self-proclaimed "superior" race destroying other races, or a self-proclaimed "superior" religion destroying other religions?

We can contrast humanism with deep ecology regarding respect and responsibility. The hubris of humanism allows us "ordinary" humans to avoid thinking about problems. We can go on enjoying ourselves because our share of the problems is unimportant or negligible; others will solve them somehow. Deep ecology, on the other hand, insists that we **are** the problems and that each of us needs to take responsibility for solutions if possible, or change if not, including changing our own basic attitudes and actions. Deep ecology works to attack the causes of problems in order to prevent them, not to find short-term cures within the current organization of world society. Deep ecologists also try to move beyond the negativity of shallow environmentalism to the positive, to stop berating on humanity for being irresponsible and start talking about what we ought to do and are doing to create real change.

Delving Deeper

John Seed and Joanna Macy developed the "Council of All Beings" (see the Ecopsychology chapter) as a deep ecology ritual to reconnect us with the living Earth and its sources of joy, commitment, and inspiration. Participation in a Council has been an important rite of passage for people coming into the ecocentric movement. Macy and Brown's "Coming Back to Life" provides a variety of deep ecology exercises for individuals or workshop leaders.

Other deep ecology rituals or workshop activities have developed around the Universe Story (see the Universe Story chapter). Sister Miriam MacGillis of Genesis Farm invented The Cosmic Walk, a walk along a timeline of the universe. Genesis Farm offers multi-day workshops on the "New Cosmology". Connie Barlow's "Gift of Tiamat" on The Great Story web site involves masked acting out of chemical elements, planets, animals, and mental elements, along with narrative poetry.

For more deep ecology on the web, see Margaret RainbowWeb's brief description and visit her deep ecology page and the rest of her web site. The Deep Ecology page of the Rainforest Information Center has an extensive reading list (but without notes).

"Deep Ecology for the 21st Century" is a series of 13 one-hour radio programs that you can suggest to your local public radio station or listen to yourself. They can found at New Dimensions by searching for the title. The Northwest Earth Institute disseminates a group study curriculum on "Exploring Deep Ecology".

The Foundation for Deep Ecology supports education, advocacy, and legal action on behalf of wild Nature through projects, publications, public programs, and grants to non-profit groups. Efforts include protecting and restoring big wilderness, making farming more compatible with biological diversity, and stopping the homogenization of the world by the global industrial economy.

For further reading in deep ecology, I recommend Thomas Berry's "The Dream of the Earth" and "The Great Work", and two collections of readings, George Sessions' "Deep Ecology for the Twenty-first Century" and Drengson and Inoue's "The Deep Ecology Movement", though some of the latter is pretty heavy going. All these authors have also written more recent books on the subject. *Since deep ecology has been developed by philosophers, reading about it can be slow going. It is important to focus on the basics rather than to get bogged down in the verbose details.*

On the other hand, many people have been introduced to ecocentric, deep ecological thinking by reading "Ishmael" by Daniel Quinn. This easy read consists largely of a dialog between a human and a gorilla in which the human learns about the difference between human cultures of "Takers" and "Leavers". "Taker" cultures started with the onset of agriculture and are supported by many religious creation stories. "Leaver" cultures, in contrast, live sustainably within natural systems. The gorilla says: "The people of your culture cling with fanatical tenacity to the specialness of man.... This mythology of human superiority justifies their doing whatever they please with the world."

"Ishmael" and most (all?) other books on these issues avoid discussing the very important problem of whether a single human life is worth more than the lives of any or all other organisms or species. We came close to destroying the Pacific yew to produce the anti-cancer drug taxol. The question must be addressed directly. How many species am I willing to wipe out so my family can live? If human population continues to grow we will see more and more demands placed on Earth systems and species to give up their normal functioning and even existence so that ***all*** *humans can survive and live long lives.*

Ecofeminism: Nurturing Mother Earth

> "Ecofeminism offers radical alternatives for reconstituting life on Earth. We seek to conjure new post-patriarchal ways of being based in part on pre-patriarchal values that resurrect and restore our original profound oneness with nature. By reactivating the ancient spiritual power of the feminine principle and balancing it with the male principle, men and women together can abandon dualistic thinking, "grow up," and live as sensitive, mature human beings in harmony with other animals and nature." – Cathleen and Colleen McGuire in Eve Online

The history of human arrogance and disrespect for nature closely parallels the history of male arrogance and disrespect for women. Riane Eisler, in her classic "The Chalice and the Blade", describes the connection between women and the natural world in pre-historic times. Ecofeminism traces its roots to ancient worship of the Goddess in hunter-gatherer cultures, including the concept of Mother Earth as a provider and nurturer. Then, thousands of years ago, the partnership paradigm represented by the chalice was gradually replaced by the dominator paradigm represented by the blade (sword). Patriarchy developed roughly at the same time as agriculture and urbanization. Women became subordinated by men politically and religiously. Women were forced into the role of caring for husband and children (the "family") while men empowered themselves to deal with everything outside the home and family. The Goddess became associated only with human fertility and childbearing. In Christianity, Mary, though worshiped as the mother of God, was relegated as a mere mortal to a position distinctly below God the Father and God the Son. Men justified their dominance, independence, and power by claiming that they were the providers and that women were weaker and needed to be protected. With few exceptions, women have been forced into subordinate roles by most human cultures for millennia.

During the 20th century, many women began to fight against the androcentric paradigm, insisting on the right to own property, the right to

vote, the right to hold any jobs, the right to any careers, and the right to equal pay for equal work. Feminism in many affluent countries paralleled in many ways the civil rights, peace, and environmental movements, bursting its bonds in the 1960s and 1970s. Now in most countries, though to various extents, women participate in business, political, and religious affairs. Feminism has become mainstream to the point where the word needs to be used less and less frequently.

Gradually through the 1980s, feminists who were also concerned with environmental issues developed an ecofeminist philosophy. Ecofeminism recognized the relationship between oppression of women and oppression of nature and expanded to see further interconnection with oppression by race and class. Women were in the vanguard of concern over effects of pollution on child and family health and of opposition to nuclear power. They saw the failure of capitalism and the global economy to deal with the issue of poverty and malnutrition. They opposed male-created social Darwinism (see the Ecojustice chapter). Ecofeminism recognized that most social problems are inter-related and complicated, so no simple solution exists to the problems created by human domination either over nature or over other humans.

Some ecofeminists argue strongly that environmental problems arise from androcentrism (male dominance) rather than from anthropocentrism (human dominance). Changing economic structure from one of dominance, exploitation, and waste requires the demise of patriarchy and its replacement with a system of cooperation, equality, respect, and nurturing both for people and nature. The paradigm shift involved in valuing females equally with males while respecting the differences, parallels exactly the paradigm shift involved in valuing nature (Earth, other species) equally with humans while still respecting the differences.

The Deep Ecology - Ecofeminism Debate

Ecofeminism developed simultaneously but independently of deep ecology through the 1980s. A significant debate occurred for a while between proponents of the two movements. Ecofeminists criticized deep ecology for being both anti-human and gender-neutral. Deep ecology was charged with failing to be concerned with human societal issues such as poverty, famine, child welfare, and the status of women, and failing to recognize the historical Earth-centered role of women. Furthermore, deep ecology was said to over-emphasize identification with the whole, the ecosphere, or the cosmos, while deprecating the concept of individualism and selfhood. It was also seen as a male-dominated movement that while preaching against anthropocentrism engaged in androcentrism. Although deep ecologists rebutted these various charges, the debate continued in universities and journals of philosophy and ethics.

In discussing this debate, Warwick Fox may have been the first to define the word ecocentrism. In his 1989 essay "The Deep Ecology Debate and Its Parallels", reprinted in Sessions' "Deep Ecology for the 21st Century", Fox states "I prefer to describe the kind of egalitarian attitude subscribed to by deep ecologists as *ecocentric* rather than *biocentric* (ital. au.)" because "ecocentric" applies to all Earth entities, rather than just living ones, and the Greek *oikos*, or "home", implies Earth-centeredness.

Over time, more and more women declared themselves to be deep ecologists, notably Joanna Macy, Ruth Rosenhek, Dolores LaChapelle, and Connie Barlow. Rosemary Radford Reuther's "Ecofeminism" essay at http://www.spunk.org/library/pubs/openeye/sp000943.txt says "Ecofeminism represents the union of the radical ecology movement, or what has been called 'deep ecology', and feminism." She goes on to say "In ecofeminist culture an ethic mutual interdependency replaces the hierarchies of domination as the model of relationship between men and women, between human groups and between humans and other beings."

Deep ecology has been infused with the concepts and importance of feminism and its issues. The Ecoshift movement has become more holistic, with recognition that we need many paths to achieve the fundamental goal of living more harmoniously with Earth's other beings and systems. Consequently the deep ecology-ecofeminism debate has gradually cooled down.

Commentary

Since its publication in 1990, the collection of writings in "Reweaving the World: The Emergence of Ecofeminism", edited by Irene Diamond and Gloria Feman Orenstein, has introduced readers, including me, to ecofeminist concepts. On the web, Cat McGuire's Eve Online web site provides a lengthier description of ecofeminism than this chapter and contains a number of essays, including her own "What is Ecofeminism Anyway?". The Ecofem.org web site, by Richard Twine, has commentary, links, and a very extensive bibliography. The Ecofeminist Philosophy Data Base contains even more extensive links to ecofeminist and related web pages. Ecofeminist Resources contains a remarkable list of books and links to many components of Ecoshift, but does not have any specific discussion of ecofeminism.

Ecofeminists like to mention that the philosophy has many facets or many varieties. *In some ways these correspond to the many aspects of Ecoshift.* Considerable differences exist within the overall general concept. Some ecofeminists relate closely to certain types of ecospirituality, such as shamanism, paganism, and Wicca (see the Ecospirituality chapter). Like deep ecologists some ecofeminists see death as part of natural cycles (see the Universe Story chapter). Many ecofeminists focus on issues related to ecojustice (see the Ecojustice chapter).

Ecofeminism remains outside the purview of most feminists, just as ecopsychology remains outside the purview of most psychologists. One issue is that the obvious duality of female-male leads to perceived duality

in many other relationships that are actually continua. For instance, associating reason with male and intuition with female compares a continuum with a dichotomy, a range situation with an either-or situation. Ecofeminism separates itself from feminism partly in refusing to see a dichotomy where there really is a continuum of behavior. It denigrates the fundamentality of separation of one species (humanity) from all other species and systems (nature), and recognizes the interconnectedness and inherent value of all life. Ecofeminism relates social justice to the wellness of Earth. Furthermore, ecofeminists recognize that patriarchy is not the same as, nor inherent in, being male. Rather it is a learned behavior pattern that can be unlearned.

On the other side, androcentrism does not completely control the economic system and its impacts on Earth. Women are consumers too, and their choices of how to spend money play major roles in supporting the globalization of retail stores and the resultant burning of fossil fuels and destruction of species and ecosystems. Just as being female does not mean being feminist, being a feminist does not mean being an ecofeminist.

Discussions of ecofeminism, like that of deep ecology and ecopsychology, often seem to degenerate into academic debates about fine points of terminology and meaning. For one example of this see Richard Twine's 2003 article "Ecofeminisms in Process" under "e-journal" on the Ecofem.org web site. But over time, ecofeminists are realizing that the main goal is more important than specific differences, just as the many strands of this book converge into an Ecoshift movement. *There is strength in respectful diversity as long as controversy over differences does not detract from the overall effort.* Indeed, some writers, such as Melissa Leach (see her lengthy history of ecofeminism at http://www.siyanda.org/docs/leach_ecofeminist.doc), believe that the ecofeminist approach has run its course. The claim that women have a closer or special relationship with nature now seems narrow and unnecessary. *Men and women are equally involved in transforming the relation of humanity to Earth.*

Green Arts: Creation Inspiration

"The artist appeals to that in us which is a gift and not an acquisition – and therefore, more permanently enduring. He speaks to our sense of mystery, pity, beauty and pain, to our latent feeling of fellowship with all creation, to the subtle but invincible conviction of solidarity which binds together all humanity: the dead to the living, and the living to the unborn." – Joseph Conrad

"Gather into yourself all of the world.
Lie on the earth and feast on the sky.
Print upon the films of your eyes' inner theater the images of all its forms and creatures.
Record upon your inner ear the sounds of water and wind, leaves and birds, the voices and songs of people.
Gather the stars into your mind, and the knowledge of huge spaces and the length of time.
Be rich with friends and companions.
Discover the loveliness of your mate and your fortune in the faces and hands of your children.
Give and be given unto, that within you may be stored and reborn all of the world about you.
You who are nature, be all of nature;
For nothing can be strange to you, and never in the heavens and earth can you be homeless."
– Kenneth Patton, "At Homeness"

Ecoshift, though solidly grounded in the knowledge of science and the realities of government and industry, conscientiously embodies the emotional and inspirational aspects of human existence. The creative arts, broadly defined here to include art, crafts, writing, music, theater, and dance, can all incorporate "green" components. Resurgence magazine includes "The Arts" as a regular section. An exhibition in Cincinnati in 2002 titled "Ecovention: Current Art to Transform Ecologies" led to a book by Sue Spaid, which documents the involvement of green artists in transforming and restoring natural landscapes and systems. The text is on the web at http://www.greenmuseum.org/c/ecovention/intro_frame.html.

As Ecoshift occurs and people spend less money on things, especially on expensive toys and gadgets, a greater share of income will be available to support education and the arts. Local music and theater will grow, allowing more musicians and actors to earn their living through performance. And homes may once again become places where crafts, poetry, theater, and music provide family entertainment.

The Written Word

ECOSHIFT has relied almost completely on the creative art of writing. Books, magazines, and web sites provide sources of information and inspiration. Many of these are referenced throughout the book and need not be reconsidered here.

Fiction about Ecoshift, on the other hand, remains rather sparse in spite of fiction's usefulness as a readable teaching tool. Two books from 1975 are now seen as classics of an emerging Ecoshift genre: "The Monkey Wrench Gang" by Edward Abbey and "Ecotopia" by Ernest Callenbach. A more recent classic is Daniel Quinn's "Ishmael", which has introduced thousands to ecocentrism. Each of these authors has followed up their success with other related novels. In the young reader category, "Grandpa's Prayers of the Earth" by Douglas Wood and "The Girl Who Slipped Through Time" by Paula Hendrich include considerable deep ecology. Edward Rutherfurd's "The Forest" develops a real sense of place about the New Forest in England, with a few statements like:

> "Whenever you try to impose a static order on nature, it doesn't work. The entire system changes anyway.... An oak tree lives in a four-hundred-year time frame. Human time-frames are always too short. So we get it wrong, and we don't really understand the natural processes half the time."

Although the dominance of murder and mayhem in current fiction disturbs me, nevertheless, such books can gain wide readership. Nevada Barr's series starring a National Park Service ranger named Anna Pigeon has topped best-seller lists. Anna usually has to deal with villains who are poaching wildlife or archeological sites. A similar series by Jessica Speart with U.S. Fish and Game enforcer Rachel Porter has deeper ecological thinking. Other novels that include violence are "Ecowar" by Richard Henrick, "The Ice" by Louis Charbonneau, and "The Family Tree" by Sheri Tepper, all of which feature the good guys versus the bad guys in terms of plundering Earth.

Two other books better illustrate the potential of environmental and ecocentric fiction. "World Made By Hand" by James Howard Kunstler involves the response of a town in New York to the end of fossil fuel; it is not a pretty picture. Artist Jeanne C. Wilkinson has published "The Meetings of WEarth: A Story for Our Times" on the web. Far in the future animals meet in Congress to debate the relation of Domesticates and Wilds and the relation of Who-Mans to themselves and to the Rooted Ones, ending with The Great Dance of the universe. *The Ecoshift movement needs much more such fiction.*

Poetry about nature is nothing new and can be found everywhere. The nineteenth century brought an outbreak of paeans to the pastoral beauties of nature, though without any real concern about whether such nature would continue to exist. Walt Whitman, in "Leaves of Grass" and other writings, began to question the adverse impact of humanity on nature. Twentieth century technology seems to have reduced the romantic poets and painters to "air head" status, out of touch with the "real" world of industrialization and consumerism.

The rise of concern about "the environment" late in the twentieth century produced new poetry expressing this concern. Mary Oliver and Gary Snyder have become the poet laureates of the movement, urging respect for nature and for Earth. Wendell Berry, in both prose and poetry, has led a transition from earlier "back to the land" movements to the more recent bioregional movement emphasizing a sense of place and growing one's own food. The collection of poetry in "Earth Prayers", edited by Roberts and Amidon, gets used frequently during Earth-based meetings and church services.

Painting, Drawing, Photography, and Sculpture

Artists have memorialized the natural world for centuries, but such work has usually externalized nature, treating it as something awesomely powerful to be subdued, or, when transformed by humanity into pastoral scenery, to be worshipped as controlled and even created by people, perhaps in the image of God's Garden of Eden. Only recently have artists begun to think ecocentrically, to see nature as integrated with humanity, or to see humanity as part of the recurring cycles of nature.

"Green" art is becoming a genre, and not just because the extensive list of artists in the Green Art Guide is run by an artist/architect named Cedric Green! Sculptors rearrange natural objects in a natural environment. Architects design structures to be green both in materials/energy and in blending with their environment. Such sculpture and architecture represent worship of the close relationship between nature and humanity. In Resurgence [Nov/Dec 2006 p.37] Jules Cashford states about British sculptor Jacob Lane: "His work embodies the wisdom of a unified vision whose mythic image is the goddess, a vision that holds sacred the body of Earth, and whose story is the Universe." Such statements can be made about a growing number of artists. Thomas Berger, who lives near my former home in the New Hampsire/Maine Seacoast is one example. In a Resurgence illustration Matt Kenyon depicts a small human figure admiring a lone large tree that is protected from

harm by a log fence; the human seems oblivious to the surrounding stumps of the many trees that were used to create the fence! Greg Patch uses non-toxic media to portray the balance of nature and the unity of life. Martin Hill draws circles with natural materials and makes beautiful photographs of them to emphasize that circularity (recycling), rather than linearity, is how nature works. In the award-winning film "Rivers and Tides", Andy Goldsworthy uses piles of stones, leaves, and twigs that are washed away as the tide comes in, thus amplifying and worshiping the temporary qualities of nature. Other relevant films include "March of the Penguins" and "Winged Migration".

Some artists combine their aesthetics with a stronger social message. The Universe Story Trilogy, by Jennifer Morgan, is wonderfully enhanced by the art of Dana Lynne Andersen. The "Song of Creation" on her web site expresses both the fantasy and awe of the Universe. On a much more "down to Earth" scale, Chris Jordan utilizes his artistic abilities to document the situation humanity has created on Earth in his "Running the Numbers: An American Self-Portrait". His art depicts such fine items as "one hundred million toothpicks, equal to the number of trees cut in the U.S. yearly to make the paper for junk mail", and "one million plastic cups, the number used on airline flights in the US every six hours". And that's just the beginning! He reproduces Seurat's "La Grande Jatte" using 106,000 aluminum cans, the number used in the US every thirty seconds

Crafts

As Ecoshift develops, Western societies will see more and more products made locally and individually and fewer and fewer products of factories in developing countries overseas. The latter half of the twentieth century was marked by continual loss of local knowledge of how to make clothing, utensils, and tools, as well as the better-known loss of locally-grown foods. "Consumers" were and are inundated with advertising urging "buying" rather than "making". Now, with the rise of Ecoshift, people concerned with sustainability and simplicity are re-learning "making". Large numbers of individuals and families remove themselves from the corporate, consumer world and seek to make a satisfying living by the personal creation and sale of "arts and crafts". Pottery, spinning, knitting, crocheting, weaving of art objects, of clothing, and of warmth-giving blankets and rugs seem to be resurging. We are making progress in turning "home-made" into a positive term again. We are resurrecting and preserving old techniques. We are using local and natural materials.

My CSM

Several years ago my always-knitting wife visited the

Machine Knitting Museum in Ruddington, England with our English co-grandmother, Jean. Jean mentioned that her father still had a 1926 circular sock machine (CSM) in his attic, and would Suzanne be interested in it. She wasn't, but I was, so Jean had it refurbished and I "inherited" it.

Many thousands of CSMs were marketed to housewives in the 1920s as a way of earning money while working at home. A pair of socks could be knit in an hour or two, faster if you were good, and then sold to the company that made the machine. However, the machines proved trickier to use than the hype implied and many were soon gathering dust in attics while the manufacturers were being sued for mail fraud.

Now these old CSMs sell on Ebay and elsewhere for around $1000 because so many of us are fascinated by the mechanical ingenuity they involve, by the ability to make socks and other tubular items like hats quickly and easily, and for me especially by the fact that they are human-powered - all you do is turn a crank. I have joined my wife as a knitter, though I use a radically different technique, and I make all my own socks and socks for lots of friends. I enjoy the positive feelings I get from working with useful technology that was essentially perfected in the mid-nineteenth century, long before electricity.

Two aspects of the burgeoning green crafts movement bother me somewhat: the greening of gimmicks, and the import of overseas craft products. Many companies produce catalogs or web shopping sites featuring all kinds of "green" products. While many of these products are useful, there are also many that are gimmicks. Each reader needs to define the difference for themselves. Just consider whether an item that is run by solar or wind power, or is made from recycled plastic or hemp, or is produced by a company that uses solar power, provides real usefulness, or whether it just adds to one's collection of consumer "stuff" (see the Voluntary Simplicity chapter).

The second aspect concerns the many efforts to financially assist impoverished peoples on other continents by purchasing their craft products. Development of micro-credit and sales over the world-wide web have enabled organization of many small craft companies, often run by women or by community groups. They produce such diverse things as clothing, fair-trade chocolate, weaving, and pottery for sale internationally. One negative aspect of this is the same as the negative aspect of purchasing any products made overseas - the energy costs of transportation. A second negative aspect involves the development of a reliance for income on the generosity of the Western wealthy, an income source that will dry up when the fossil-fueled house of cards tumbles down. In other words, craft export does not help to develop a local sustainable economy. To a certain extent, the same can be said about exporting Native American crafts outside their source bioregion.

Performing Arts

Although "green" may not yet have penetrated very far into the big-scale performing arts of Broadway and Carnegie Hall, there are good beginnings here and there in music, theater, drumming, and dance.

Environmental music surged in the late 60s and around Earth Day 1970. In 1969 Joni Mitchell wrote "Woodstock" including the famous chorus "We are stardust, we are golden, and we've got to get ourselves back to the garden", a concise statement of humanity's place in the Universe and our status on Earth. Beginning at the same time, Pete Seeger sang of cleaning the Hudson River while cruising in the sloop "Clearwater". Many more songs followed, with the classic song-book of 1992, "Rise Up Singing", listing 25 songs under the heading "Ecology". The more ecocentric of these include "The Earth is My Mother" by Carol Johnson, "Honor the Earth" by Molly Scott, "Let It Be (When you walk in the forest, let it be)" by Malvina Reynolds, and especially "This Old Earth" by Bob Zentz.

Green song-writing continues. "Seize the Day", a British acoustic band that also joins in protests, has been called "the musical wing of the ecology movement" [Resurgence 237:40]. They have protested the WTO in Seattle, but now they pledge never to fly again, so they won't repeat their

2000 tour of the U.S. All their music can be heard on the web site; songs I particularly like are "G 'n' T" (Green and Tory), and "Child of the Universe". Then there is "Dancing in Fifty-year Forests (playing in stumps, all that's left of the giants)" on Laura Lind's album "Wild Birds".

In theater arts, puppetry and street theater have always been a part of the environmental movement, though documentation of these activities is sketchy. Drumming also has played a role in the environmental and peace movements for decades. The World Drum has traveled around Earth drumming in churches and meetings to call attention to the planet's "critical situation". Another form of ecocentric participatory theater finds its expression in the Council of All Beings described in the Deep Ecology chapter.

Mother Earth vs. World's People

I am playing the role of bailiff to an audience of 70 during a Sunday service at my Unitarian-Universalist church in Tamworth NH. I call the "jury" to order and introduce His Honor. I announce the charge being brought by the prosecutor, Mother Earth. "Mother Earth is charging World's People with acting in ways that cause her grievous personal harm and limit her inherent civil rights to a fruitful existence." Mother Earth calls Ms. Melting Glacier (covered by a white sheet), Mr. Rising Oceans (with swim fins and draped in seaweed), Miss Gulf Stream (running, but slowing down during testimony), and others, and interrogates them about what is happening to them. Another witness, Mr. Hummer Dinger , argues contrarily "Production, that's what it's all about, ma'am, unfettered production. That's what has given us the world's best life-style. All the things we own and enjoy. Like my Hummer." After closing arguments by both sides, the "jury" of the audience discusses and votes on the verdict, which this time was "guilty" of course. The judge closes the case with an exhortation about what individuals can do to help Mother Earth.

The play, "The Case of Mother Earth vs. World's People - Perhaps the Most Important Trial in the History of Civilization", by Doug Stewart, was written for churches and other groups. It provides a fun way to get across a variety of important facts about what we are doing to Earth's systems, including the really scary prospects of rising sea level and stopping the Gulf Stream. The play can be purchased from the Ministry for Earth as part of its Global Warming Action Kit Volume 1.

Finally, dance also plays a role in spreading the Ecoshift message. In particular, Joanna Macy brought the Elm Dance from Latvia in 1992. The dance developed in response to Chernobyl, in the most heavily impacted areas, as an effort to maintain spirit and action. Macy says: "When swaying in place, imagine that you can feel the energy from the heart of the Earth spiraling up through the floor into your body. When the energy reaches the heart chakra, send it out for the healing of the elms and all beings." The dance is now used world-wide as a deep ecology ritual (see the Deep Ecology chapter).

The Spiral or Grapevine dance, originated by Starhawk, plays a similar participatory role in Earth-based spirituality groups. The dance begins in a circle, then breaks into a line that spirals into the center, reverses direction and leads out again into a circle. As those spiraling outward pass those still going inward, each participant "greets" every other participant. This dance is often used by Wiccans and other pagans as a Samhain or New Years dance. At the Unitarian-Universalist conference my family attends every year at Ferry Beach in Saco, Maine, we use the Spiral Dance as a closing ritual along with the chant "Go Now in Peace", because it enables each person to acknowledge and say goodbye to each other, even though there are 200 of us.

Singing, chanting, drumming, writing, painting, pottery, knitting, crafting, dancing, acting, sculpting - all creative arts can be means of expressing the joys and concerns of the human relation with Earth. All can be meditative and spiritual. Whether done individually or in groups, arts can stir the soul and create energy for personal and societal change.

Ecospirituality: Caring for Creation

"In the past we used to be told, "Be good, or you will go to hell." Now we say, "Be environmentally friendly, or civilization will come to an end." Fear is a bad reason for being a good environmentalist. There are better reasons to care for the Earth. Living in harmony with the Earth is good in itself. Sustainable, frugal, simple and compassionate ways of living are fair to all beings - humans and other than humans. A culture of nonviolence, respect and reverence for life has to become part of our psychological make-up. Even if there were no global warming and no shortage of oil, we should not be destroying life, because life is sacred. And through gratitude to life we are enchanted and inspired and happy. Caring for the Earth community, which includes the human community, is a matter of joy, and not a matter of compulsion." – Satish Kumar [Resurgence, July 2006, p. 3].

"If we distort the Earth community, then we have ruined the very presence of the divine. We will simply never be able to be in communion if we do this. Saving the natural world is saving the divine presence. The whole Universe manifests the divine more than any single being. Above all, religion should attend to protecting the whole community of life.... I propose that we begin to celebrate the emergent Universe as a manifestation of the divine. We can celebrate the sacred moments, which are times of transition. Darkness to light. Night to day. The solstices. Springtime. We can build our liturgies around these events. We can celebrate a Universe that has gone through a sequence, moving from lesser to greater complexity, lesser to greater consciousness." – Thomas Berry [Interview, Wild Earth, Summer 2000, p. 96].

Real change of human behavior in relation to Earth and its systems cannot come about without a deep spiritual commitment. Permanent changes in life-style require a **belief** in the need for change. It is a lot like the difference between going on and off a "diet" and making a permanent change in eating and exercise habits. Changing habits requires fundamental change in attitude and lifestyle; diets don't. Altered habits last; diets don't. Ecoshifters recognize that "saving the Earth" requires a fundamental change in the goals of human society, a change in what humans believe – ethically, spiritually, and religiously.

Peter Seidel describes, in "Invisible Walls", the human need to explain the events of life and the purpose of existence. To satisfy this need we "believe" in certain ideas and concepts. Belief means acceptance of such ideas as being true without justification. At some level each of us has such unjustified beliefs that help us to function, to survive, and to be happy. As individuals, such beliefs constitute our "spirituality". Codification of a set of beliefs adhered to by a group of people creates a "religion". Seidel points out that "Conforming [to a codified set of beliefs] makes one more popular and acceptable; questioning is uncomfortable and risky" [p.135], and "to change a belief is an admission of having been wrong" [p.137].

Humanity has proven over and over that beliefs (spirituality) are stronger that facts (science) in determining individual behavior. An individual only changes personal beliefs when it becomes obvious that his/her current beliefs are not working for him/her. An individual must come to recognize that anthropocentric beliefs are not working before individual Ecoshift can begin.

Concern over the human relationship with the rest of Earth has generated new respect for ancient religions and fostered many modifications of current religions. Earth-based spirituality is developing rapidly across the whole religious spectrum. Just as the Golden Rule of human interactions permeates all religions, so now its ecocentric version, though reflected differently through different religions, is filtering into all of them.

Historically for most, if not all, of the world's great religions, Western or Eastern, the purpose of one's current existence is to earn a way into some glorious future existence. Whether the goal is Heaven, Nirvana, or Enlightenment, each religion spells out the pathway in great detail, usually with some negative hell or reincarnation as further incentive to follow the right path. Over recent centuries, religions have trended away from an emphasis on happiness in the next or "after" life to become more concerned with happiness in this life. As the industrial age and fossil fuel generated the possibility of "climbing out" of poverty for vast numbers of people, religions have become more concerned with raising the quality of this life and somewhat less concerned about the quality of the next life. The achievement of affluence by many and the desire for it by many more coincide with development of consumerism, the "Me" generation, and

egoism. As described in this book, we are just now learning that we need to modify that egocentrism to ecocentrism.

Consequently, ecocentric authors emphasize the importance of belief about the human place in Creation. Cosmologist Joel Primack and his co-author Nancy Abrams say "*There is no deeper source of meaning for human beings than to experience our own lives as reflecting the nature and origin of our universe* (ital. au.)" ["The View from the Center of the Universe" p.203]. And Episcopal priest Matthew Fox reiterates "There can be no respect for our place in the environment and the environment's place in us without a spirituality that teaches us reverence for the cosmos in which we find ourselves." Unitarian Universalist Connie Barlow states "I believe that a greening of worldviews must take place at a level deep enough to alter (or even direct) one's religious outlook" ["Green Space, Green Time" p. 20]. In "The Historical Roots of Our Ecological Crisis" [Science 155: 1203-1207] Lynn White says "What we do about ecology depends on our ideas of the man-nature relationship. More science and more technology are not going to get us out of the present ecologic crisis until we find a new religion, or rethink our old one."

Christian Stewardship

The Holy Bible portrays two kinds of God: a destroyer of those who do not conform, and a nurturer who cares for all. The former God leads to concepts of kingdom (or empire), of dominance, and of humanity as the purpose of creation. The latter God leads to concepts of love, of equality, and of humanity as an integral part of creation. Christianity has long debated this difference, and the difference between a transcendent God separate from Earth and its beings and an immanent God and Divine Power within and always present. Lynn White writes:

> "The greatest spiritual revolutionary in Western history, Saint Francis, proposed what he thought was an alternative Christian view of nature and man's relation to it; he tried to substitute the idea of the equality of all creatures, including man, for the idea of man's limitless rule of creation. He failed. Both our present science and our present technology are so tinctured with orthodox Christian arrogance toward nature that no solution for our ecologic crisis can be expected from them alone. Since the roots of our trouble are so largely religious, the remedy must also be essentially religious, whether we call it that or not. We must rethink and refeel our nature and destiny. The profoundly religious, but heretical, sense of the primitive Franciscans for the spiritual autonomy of all parts of nature may point a direction. I propose Francis as

> a patron saint for ecologists." – ["The Historical Roots of Our Ecological Crisis", 1967, Science 155: 1203-1207]

Many Christian groups are re-viewing the Bible, finding references to caring for Earth and all its beings in contrast to the famous "have dominion over them" statement of Genesis. Isaiah 5:8 says "Woe unto them that join house to house, that lay field to field, till there be no place that they may be alone in the midst of the Earth." From Jeremiah 12:4 "How long must the country lie parched and its green grass whither? No birds and beasts are left, because its people are so wicked, because they say, 'God will not see what we are doing.'" The famous quote from John 3:16-17 "God so loved the world that he gave his only Son" apparently has "cosmos" for "world" in the original Greek. The Christian Stewardship page of the Fund for Christian Ecology contains many more Bible quotes.

Fundamentalist and evangelical Christians are beginning to recognize the importance of protecting rather than destroying God's Creation. The Christian group Target Earth works in various ways to protect Earth; their Conscientious Consuming Page quotes the Bible about greed and wealth. Earth Ministry states its mission as:

> "to engage individuals and congregations in knowing God more fully through deepening relationships with all of God's creation. We believe that through this experience our personal lives and our culture will be transformed. These transformations include simplified living, environmental stewardship, justice for all creation and a worldview which sees creation as a revelation of God. Together these lead to a rediscovery of the vitality of the Christian faith."

Former Dominican and now Episcopal priest, Matthew Fox, developed creation spirituality in the early 1980s in order to bring nature, the cosmos, creativity. compassion, and the panentheistic Divine back into Christian spirituality. The Fund for Christian Ecology states that "Creation spirituality attempts to help us recover the nature mysticism of some medieval Christians such as Meister Eckhart, Julian of Norwich, Mechtild of Magdeburg, Hildegard of Bingen, and Francis of Assisi." These medieval Christian thinkers embraced ecocentric concepts, and though largely ignored for centuries are now, thanks to Matthew Fox, becoming revered in the Ecoshift movement.

The concept of humanity having stewardship responsibility for Earth arises directly from Biblical interpretations. Stewardship implies "caring for" rather than exploiting, maintaining rather than destroying, even loving nature rather than disdaining it. *Although still anthropocentric because humans remain as controllers and manipulators, the stewardship concept at least moves away from the paradigm that God gave Earth to humanity for whatever purposes humanity chooses.*

Some Christians have moved beyond stewardship to taking responsibility for their own impacts. A group of religious retreat directors wrote the "Shakertown Pledge" in 1973, which is quite early in Ecoshift terms:

> "Recognizing that Earth and the fullness thereof is a gift from our gracious God, and that we are called to cherish, nurture, and provide loving stewardship for Earth's resources, and recognizing that life itself is a gift, and a call to responsibility, joy, and celebration, I make the following declarations:
>
> - I declare myself a world citizen
> - I commit myself to lead an ecologically sound life.
> - I commit myself to lead a life of creative simplicity and to share my personal wealth with the world's poor.
> - I commit myself to join with others in the reshaping of institutions in order to bring about a more just global society in which all people have full access to the needed resources for their physical, emotional, intellectual, and spiritual growth.
> - I commit myself to occupational accountability, and so doing I will seek to avoid the creation of products which cause harm to others.
> - I affirm the gift of my body and commit myself to its proper nourishment and physical wellbeing.
> - I commit myself to examine continually my relations with others and to attempt to relate honestly, morally, and lovingly to those around me.
> - I commit myself to personal renewal through prayer, meditation, and study.
> - I commit myself to responsible participation in a community of faith."

Statement of The Patriarch, Bartholomew

Bartholomew, Ecumenical Patriarch of the Orthodox Church, moved considerably beyond Christian stewardship in his November 8, 1997 address at the Environmental Symposium, Santa Barbara, California and his environmental protocol of Sept. 1, 2002. Here are selections from November 1997:

> "[The Ecumenical Throne of Orthodoxy] view[s] with alarm the dangerous consequences of humanity's disregard for the survival of God's creation....

By reducing our consumption ... we come to ensure that resources are also left for others in the world. As we shift our will we demonstrate a concern for the third world and developing nations. Our abundance of resources will be extended to include an abundance of equitable concern for others.

We must challenge ourselves to see our personal, spiritual attitudes in continuity with public policy[, to free] us of our self-centered neediness, that we may do good works for others. We do this out of a personal love for the natural world around us. We are called to work in humble harmony with creation and not in arrogant supremacy against it. Asceticism provides an example whereby we may live simply.

Asceticism is not a flight from society and the world, but a communal attitude of mind and way of life that leads to the respectful use, and not the abuse of material goods. Excessive consumption may be understood to issue from a worldview of estrangement from self, from land, from life, and from God. Consuming the fruits of the earth unrestrained, we become consumed ourselves, by avarice and greed. Excessive consumption leaves us emptied, out-of-touch with our deepest self. Asceticism is a corrective practice, a vision of repentance. Such a vision will lead us from repentance to return, the return to a world in which we give, as well as take from creation....

[T]o commit a crime against the natural world is a sin. For humans to cause species to become extinct and to destroy the biological diversity of God's creation – for humans to degrade the integrity of Earth by causing changes in its climate, by stripping the Earth of its natural forests, or destroying its wetlands – for humans to injure other humans with disease – for humans to contaminate the Earth's waters, its land, its air, and its life, with poisonous substances – these are sins.

In prayer, we ask for the forgiveness of sins committed both willingly and unwillingly. And it is certainly God's forgiveness, which we must ask, for causing harm to His Own Creation.

Thus we begin the process of healing our worldly environment which was blessed with Beauty and created by God. Then we may also begin to participate responsibly, as persons making informed choices in both the integrated whole of creation, and within our own souls."

Ecotheology

Religious movements have been slow to become involved in "environmental" issues, with little organized theological concern through the 1970s and 1980s. Rising awareness of climate issues perhaps triggered a change and now individuals and groups from all different spiritual and religious backgrounds are involved in Ecoshift. Leaders from many of Earth's religions worked to produce the Earth Charter (see Appendix 3).

In 1994 David Hallman edited a collection of primarily Christian writings titled "Ecotheology", which was published by the Catholic Foreign Mission Society of America. Later books expanded ecotheology to other major religions. The Forum on Religion and Ecology has published an influential series of books on the ecological beliefs and practices of all the world's major religions. Mary Evelyn Tucker, editor of the series, has spark-plugged a great deal of thinking and writing about ecotheology. Essays in "The Greening of Faith", edited by John Carroll *et al.*, come from all religious backgrounds and produce great hope for Ecoshift. John Carroll has also written or edited several books on ecotheological concepts. *When I found out about these works in the late 1990s, I finally began to see some hope that humanity could change its ways.* No matter whether the magnificence of Earth and its beings was produced by God a few thousand years ago or by evolution over several billion years, all religions can question whether humanity should destroy this creation in just 200 years.

Numerous groups are now working ecumenically to bring the concepts of Ecoshift into religion. The National Religious Partnership for the Environment sees the natural world as a sacred work of divinity. Religious Witness for the Earth aims to grow a movement dedicated to public witness in defense of Creation. The Web of Creation is an ecumenical Lutheran effort emphasizing ecojustice and environmental ministry.

For many but not all religionists, the Universe Story of the Big Bang and evolution (see the Universe Story chapter) have become accepted truths. Religion and science are not at odds, but the findings of science are being incorporated into religion. Michael Dowd emphasizes that the specifics of a religion are not relevant. He says "All religions make sense given the bioregions and cultures in which they emerged" but they can change in response to new knowledge. Dowd goes on to say that "All of reality is sacred and science is our method of understanding it" and explains the difference between day language (facts) and night language (meanings). Night language interprets the facts of day language into myths (belief stories) and thus into spirituality and religion.

Thomas Berry, a Catholic priest, is rightly revered by Ecoshifters for combining the new story of science with the spirituality of religion in his many writings on the wonders of the Universe and humanity as its voice. "The Dream of the Earth" has greatly influenced me and thousands of

others in searching for an ecospirituality that returns humanity into communion with the non-human world and emphasizes the critical nature of our dependence on the natural processes that support and gladden us. The search is aided by Stephen Bede Scharper in "Redeeming the Time", which examines the contributions of the Gaia hypothesis, process theology, the New Cosmology, ecofeminism, and liberation theology to ecotheology in a Christian context. He sees liberation theology, a movement that originated to empower poor South Americans, as a component of ecotheology. John Carroll and Keith Warner in "Ecology and Religion: Scientists Speak" have collected writings by various environmental scientists about the interconnection between their religion/ethics and their science. Other books that seek to connect the sacred spirituality of Earth with the Universe Story of science include "The Sacred Depths of Nature" by Ursula Goodenough and "Cosmology and Creation" by Paul Brockelman.

Buddhism and Jainism

Some of the world's great religions have never contained the dominance concept of Judeo-Christianity and have always believed in a spiritually equal relationship between the human and the other-than-human. Buddhism has attracted Western converts for a variety of reasons. Buddhism teaches that the source of suffering is craving, so reduction of suffering requires moderation (the Middle Way), and the practices of meditation and mindfulness of one's self and its relation to other beings, human and not. The development of "Western Buddhism", particularly in English-speaking countries, is in part an means of escaping from the "rat-race" of consumerism and big business while seeking non-violence and peace. Thich Nhat Han plays a major role in this movement. Some Western Buddhists, like Stephanie Kaza, Gary Snyder, and Joanna Macy, are deep ecologists as well and have worked unceasingly to connect the ancient values and practices of Buddhism and the modern values and practices of Ecoshift.

I personally feel more connected to ancient Jainism of northwestern India. The most spiritual Jains, those closest to true Enlightenment, are monks who work exceedingly hard to avoid causing death to any living creature. The Jain tradition of equality of a human life with the life of any other organism has been part of the religion for 2600 years or more. O Books publicizes a new book by Aiden Rankin, "The Jain Path: Ancient Wisdom for the West.", with the statement:

> "Jainism is India's oldest spiritual tradition, and one of the world's oldest religions. It is not well known in the West. But it embodies many of the ideas underlying current thinking on the interconnectedness of all living systems, the principle of non-violence and the need to live simply.
>
> It is perhaps the most demanding, rational and radical of all religions, attaching great importance to individual responsibility. Today we are questioning our own inherited values and also rediscovering ancient traditions. We are looking for continuity and balance – a 'return to the centre.' Understanding of Jain principles can point us towards the elusive 'paradigm shift', giving spiritual and intellectual strength to a new global ethic of compassion and interdependence.
>
> Based around the individual's own spiritual journey and the choices he or she makes, Jainism, more than other spiritual tradition[s] alive today, can bridge the gap between eastern and western patterns of thought."

The Jain concept of *ahimsa*, which means "do no harm" implies pursuing a rigorously ecocentric lifestyle, with consumption kept to a minimum and a special effort to avoid harming other life forms. The concept of *anekant* or many-sidedness implies that there are many paths to truth. So Jains are tolerant and flexible, and they recognize that all faiths are part of human spiritual searching. Jains value both reason and emotion, believe in teaching by example, and believe that the acts of an individual can and do make a difference. *Anekant* also means that true dichotomies, even "right" and "wrong", do not exist; realities are a continuum or a spectrum, so strong positions on any issue are anathema. This leads to acceptance of paradoxes such as being vegetarian even though plants, as well as animals, have souls, and achieving prosperity while avoiding materialism.

Just as with Hinduism and Buddhism, Jainism bases its beliefs on a kind of reincarnation. Each living being possesses a *jiva*, which is immortal and passes from one being to another, accumulating or losing "good" karma over time. Ultimately, a *jiva*, after passing through many lives, may accumulate enough good karma to reach an enlightened state in which continuous rebirth or *samsara* no longer happens. Because the *jiva* is not limited to human life, it provides connectedness with non-human organisms of all kinds, and illustrates the recycling principle of life. *Even for someone like me who does not believe in jivas or samsara,* Jainism has much to contribute to ecocentric thinking, not the least being its long history.

Earth-based Spirituality

Over 3500 years ago the Egyptian Pharaoh Akhenaton tried to convert his people from worshipping hundreds of gods to worshipping the face of the Sun as the one true God. Akhenaton understood that all life on

Earth depends on the Sun. The Sun produces or produced all the energy sources that drive life on Earth: nuclear, fossil, geothermal, solar, wind, tidal, water, and biomass. The sun gives light and heat to us in the daytime and gives moonlight at night. It controls the motion of the planets that have been given so much meaning by people over millennia.

Though Akhenaton failed in his praise-worthy but injudicious effort, a variety of other ancient religions have succeeded in maintaining an intimate relation between humanity and Earth. We Westerners have called these Earth-based religions "pagan" and dismissed them as inferior, but Ecoshift now incorporates believers in Wicca, Shamanism, and Native American or other indigenous spiritualities. As with Jainism, we need not profess acceptance of all aspects of any one religion, but can learn important lessons from it.

Jerry Mander in "In the Absence of the Sacred", Thomas Berry in various writings, and many others, praise Native American and other shamanistic traditions for a deeply spiritual sense of place, a vital understanding of provision from nature, a total lack of individual ownership of land, and living a simple but spiritually rewarding life-style. *"Indigenous peoples", who are fighting worldwide to retain their freedom and independence in the face of globalization and consumerism, might be defined as peoples who do not have a word for "environment" in their language.* They see no separation between "us" humans and "it" nature. In "Animism: Respecting the Living World" Graham Harvey describes a spirituality based on an ecocentric view that other-than-human beings are "persons" deserving of respect, and what this means for ethics and life-style.

Wicca and other neo-paganism developed from feminism (see the Ecofeminism chapter) and its efforts to bring the right brain and emotion back into human endeavors. Such Earth-based spirituality honors the Sun and the seasons that the Sun-Earth relationship creates. The pagan holidays of Samhain (Nov. 1), Yule (Dec. 15), Imbolc (Feb. 1), Ostara (March 15), Beltane (May 1), Litha (June 15), Lugnasa or Lammas (Aug 1), and Mabon (Sep.15) celebrate the changing solar seasons and the cycles of nature that control human food supply and shelter needs. Some of these ancient holidays have left their mark on Western calendars, as Samhain as All Souls Day or Halloween, Yule as Christmas, Imbolc as Candlemas or Groundhog Day, Ostara as Easter, and Beltane as May Day. Starhawk's book "The Spiral Dance" has greatly influenced the neopagan movement. In my denomination the Covenant of Unitarian Universalist Pagans promotes the practice and understanding of Pagan and Earth-centered spirituality within Unitarian Universalism and fosters healing relationships with the Earth and all the Earth's children. Pagan celebrations are an integral part of Ecoshift for some people.

Pantheism and Unitarian Universalism

Pantheism describes any theology that believes that God, or the Holy Spirit, or the Creative Power, or whatever else one calls the concept, exists not elsewhere in some remote inaccessible place, but within everyone and everything. There is thus no separation of the holy from the unholy, or of the sacred from the profane. Pantheism incorporates ecocentric principles of equality between humans and other living beings, not unlike Buddhist, Jain, Native American, and Pagan beliefs. Pantheists emphasize the wonder and exaltation of this life on Earth rather than an expectation of some future life elsewhere. I can do no better than to quote the belief statement of the World Pantheist Movement (which is just one pantheist group) and let it speak for itself about its ecocentrism.

- "We revere and celebrate the Universe as the totality of being, past, present and future. It is self-organizing, ever-evolving and inexhaustibly diverse. Its overwhelming power, beauty and fundamental mystery compel the deepest human reverence and wonder.
- All matter, energy, and life are an interconnected unity of which we are an inseparable part. We rejoice in our existence and seek to participate ever more deeply in this unity through knowledge, celebration, meditation, empathy, love, ethical action and art.
- We are an integral part of Nature, which we should cherish, revere and preserve in all its magnificent beauty and diversity. We should strive to live in harmony with Nature locally and globally. We acknowledge the inherent value of all life, human and non-human, and strive to treat all living beings with compassion and respect.

- All humans are equal centers of awareness of the Universe and nature, and all deserve a life of equal dignity and mutual respect. To this end we support and work towards freedom, democracy, justice, and non-discrimination, and a world community based on peace, sustainable ways of life, full respect for human rights and an end to poverty.
- There is a single kind of substance, energy/matter, which is vibrant and infinitely creative in all its forms. Body and mind are indivisibly united.
- We see death as the return to nature of our elements, and the end of our existence as individuals. The forms of "afterlife" available to humans are natural ones, in the natural world. Our actions, our ideas and memories of us live on, according to what we do in our lives. Our genes live on in our families, and our elements are endlessly recycled in nature.
- We honor reality, and keep our minds open to the evidence of the senses and of science's unending quest for deeper understanding. These are our best means of coming to know the Universe, and on them we base our aesthetic and religious feelings about reality.
- Every individual has direct access through perception, emotion and meditation to ultimate reality, which is the Universe and Nature. There is no need for mediation by priests, gurus or revealed scriptures.
- We uphold the separation of religion and state, and the universal human right of freedom of religion. We recognize the freedom of all pantheists to express and celebrate their beliefs, as individuals or in groups, in any non-harmful ritual, symbol or vocabulary that is meaningful to them."

Although historically separate from pantheism, many Unitarian Universalists like me call themselves pantheists. The similarity can be seen by comparing the pantheist statement above with the seven U-U Principles, given here in a children's version by Mary Ann Moore and Helena Chapin:

1. Each and every person is important.
2. All people should be treated fairly and kindly.
3. We should accept one another and keep on learning together.
4. Each person must be free to search for what is true and right in life.
5. All persons should have a say about the things that concern them.
6. We should work together for a peaceful, fair, and free world.

7. We should care for our planet earth, the home we share with all living things.

U-Us have our own Ministry for Earth, which grew out of the Seventh Principle.

My Own Spirituality

- I believe in the beginning there was NoThing. Then the Universe began creating itself.
- I believe in the **continuing** creative power of the Universe.
- I believe in the magnificent, even inexpressible, beauty of creation at all scales, from sub-atomic quarks through myriads of life forms to superstrings of galaxies.
- I believe in the inherent worth and value of all these components of creation.
- I believe that humans are currently the only life-form on Earth that can contemplate its intricate relationship to the creative powers of the Universe.
- I believe that humans have an obligation to worship and protect the diversity and beauty of continuing creation.
- I believe that to protect creation in our tiny corner of the Universe we humans must greatly reduce our numbers and our impact on Earth.
- I believe that ethics are **not** inherent in the flow of the Universe, in continuing creation.
- I believe that each species, or even each culture, develops its own ethics in order to improve the quality of interrelationships among its own individuals and groups.

When asked about a supreme being I say:
I believe in the Continuing Creative Power of the Universe.

My version of the Golden Rule is:
Respect; not arrogance!

Personal Ethics

In this section I want to expand on the last two of my list of beliefs above. If you believe that ethics and the concepts of good and bad are imposed by God or some other external source, you might choose to skip this section, it is not critical to belief in the need for Ecoshift.

Richard Louv writes in "Last Child in the Woods" [p. 290] that "Eventually, most of us figure out that it's people, not nature, who create morality, values, ethics – and even the idea that nature itself is something worth preserving." Earth itself and the Universe don't care! They will carry on regardless of what humanity thinks and does. No matter how we treat Earth and its finely tuned ecosystems and inhabitants, creation here will continue one way or another, and creation in the vast Universe around us will continue virtually undisturbed.

Personally I do not feel compelled to determine the purpose of the Universe or of Creation. It exists, and that is enough for me. Furthermore, it is wonderful, amazing, awesome, and therefore deserves respect and love. It has produced my life, and I enjoy living. Among all humans Creation has produced a strong innate urge to **live** even when living is very hard.

The continuing creative power of the Universe is neither bad, nor good, it just exists. When one galaxy captures a billion stars from another galaxy it is neither "bad" nor "good"; it just happens. When thousands of meteorites pockmark the surface of the moon, it (creation) is neither bad nor good, it just happens. When a great blue heron swallows a fish, alive and whole, it is only "bad" or "good" depending on the point of view - heron or fish. When a mosquito lands on my arm and starts sucking my blood, it is bad for me and good for the mosquito. If I kill it, the outcome becomes bad for the mosquito and good for me. Yet I maintain that the whole situation is neither bad nor good with respect to the creative power or to the rest of the universe. Apparently then a "bad" or "good" act (or "good" versus "evil") depends on the point of view of each participant in that act, and does not derive inherently from the creative power. As pointed out by Primack and Abrams in "The View from the Center of the Universe", "the very idea of being 'defective' is a purely human opinion."

Different species of life, or different groups within a species, apparently develop their own set of ethics, its list of "good" and "bad"; and these ethics can change over time. Starlings and swallows have their rules about spacing between individuals perched on a wire. Hierarchies in a lion pride or a monkey group, schooling of fish, communal child-rearing by eider ducks, dog greetings – each seems to represent a communal selection or designation of "bad" and "good" behavior. (Ethicists may argue whether such behavior really represents ethics and morality in non-human species; *I take the ecocentric view that it does.*) A specific view of morality (a set of ethics) thus is established by a group of individual beings, that is, by a society, and is relative to that society. It is not an absolute demand derived from the Creative Power. In humans, religion has developed as a means to enforce morality, to emphasize a group's determination of what is "bad" or "good". A religion contains a set of assumptions about the Universe, which are developed to support that religion's morality, and a set of practices designed to teach the assumptions and the ethics.

Yet, all of Earth's human religions seem to reach one fundamental or "Golden" rule. Christians state it as "Do unto others as you would have them do unto you" and normally apply it only to intra-human behavior. *My statement of the rule, "Respect; not arrogance" applies to both human-human and human-nature interactions. Respect means trying to understand and not judge other people's beliefs and behaviors. Arrogance means deciding for others what they should believe and do. Respect means allowing organisms and ecosystems to live and do their own thing. Arrogance means willfully using and even destroying organisms and ecosystems for personal or societal benefit. Expanding the Golden Rule to include human interactions with the other-than-human world may be a requirement for Ecoshift to succeed.*

Ecospirituality and the greening of religion indicate changes at the fundamental level of beliefs that drive human behavior. The increasingly widespread recognition among all religions that human thinking about Earth's systems and beings must change provides considerable hope that a paradigm shift can really occur.

Conclusion: Can Ecoshift Be Accomplished?

"It has often been said that, if the human species fails to make a go of it here on Earth, some other species will take over the running. In the sense of developing intelligence this is not correct. We have or soon will have exhausted the necessary physical prerequisites so far as this planet is concerned. With coal gone, oil gone, high-grade metallic ores gone, no species however competent can make the long climb from primitive conditions to high-level technology. This is a one-shot affair. If we fail, this planetary system fails so far as intelligence is concerned. The same will be true of other planetary systems. On each of them there will be one chance, and one chance only." – Fred Hoyle

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Whether our time will be known as the time of the Great Turning or the time of the Great Unraveling is a question of choice, not destiny. The leadership must come from the growing number of those among us who have awakened from the cultural trance, said no to the addictions of Empire, and acquired the perspective and wisdom of a mature human consciousness." – David Korten [The Great Turning, p. 353]

"Wealth today is culturally associated with extensive physical possessions, large financial portfolios, social celebrity, pricey educations, and ease of life enjoyed by a few... Wealth should be measured more by our ability to give and the fact that we do.... In such a cultural paradigm education would again become prized by parents and children. Our money would satisfy simpler needs, modest homes and tamed budgets. Things that keep us so stressed and busy now would drop out of our lives as more meaningful things of intrinsic value are pursued. Celebrity would come to those who give of themselves and their

resources in the most profound ways." – Eric Kristjanson ["Letters", World Ark, Sept/Oct 2006, p. 2]

Fred Hoyle was a well-known astronomer who fought the concept of the Big Bang (which he named) for many years in spite of the overwhelming weight of the evidence. (So you may choose to discount his immensely powerful statement above.) What he is saying is that each planet probably gets only one chance at developing a technologically knowledgeable civilization like ours, because it takes billions of years of geology to concentrate the minerals like iron and oil that seem to be required for such civilization. There can be no second chance if the civilization quickly disperses or burns up those minerals. One possible reason we have not detected signals from extra-terrestrials may be that civilizations that can produce such signals do not last long, even though we are now proving that there are planets around most stars.

The many facets of Ecoshift described in this book outline an alternative to a high-tech future. Ecoshift recognizes that changes need to be much deeper than emission trading, geothermal energy, and other sustainable technofixes. "Solving" our energy and climate issues will not solve problems of poverty, species extinction, and overpopulation. The holistic Ecoshift movement encompasses a wide variety of activities, choices, paths, and beliefs. Yet many concerned individuals and organizations remain unaware that they are part of a broad movement. Perhaps this book can help remedy that situation.

Ecoshift can be accomplished if the movement continues to grow, but growth will take desire and dedication to educating humanity. The energy/climate crisis and the rapid increase in fossil fuel prices in early 2008 create a "climate" of concern amongst the general public and thus an opportunity for teaching about the concepts of Ecoshift. Environmentalism, especially preachy "gloom and doom", has not worked to change basic behavior; change does not result from scare tactics or from blaming others. Ecoshift offers a positive and fundamental paradigm shift from anthropocentrism to ecocentrism, from human arrogance to human respect for the diversity of humanity and the other-than-human wild. Ecoshift does not yet have detailed answers for all human-Earth problems. It is a direction, not a specific plan. The details need to be worked out over subsequent decades and may well differ deeply in different places.

Personal Change

Peter Seidel says "If we were honest and looked facts straight on, we would find ourselves in a very awkward position. Ethically we would be required to do without luxuries we have come to love, but that our ancestors got along very well without. Our response has been simple: Let

this be a non-question" ["Invisible Walls" p. 157]. However, instead of either giving up worrying or altruistically "giving up" our lifestyle, doing right by Earth should feel natural, just as taking care of a child or being nice to other people feels natural. It should not be a sacrifice, but a gratification. We need to learn that simpler, more ethical living can be more than satisfying. And we need to build an ecocentric ethic that sustains such learning. Living by an ecocentric ethic requires overcoming a lifetime of education, training, and experience in an egocentric consumerist world. The premise of Ecoshift is that we must change our inner beliefs in order to successfully and fundamentally change our outward practices.

Jim Merkel's "Radical Simplicity" provides both inspiration and a plan of action for moving from unconscious unsustainability through conscious unsustainability to conscious sustainability and finally unconscious sustainability. He describes in detail a personal data-based mechanism for individual saving of time, money, and ecological footprint while enhancing enjoyment of life. He concludes simply that "Achieving sustainability [while leaving 80% of Earth for continuing non-human creation] is only two steps away:

1. single child families (on average) until population reaches one billion (about 100 years), and
2. a personal ecological footprint not to exceed six acres [1/4th of the current U.S. average]."

Susan Mokelke [Timeline March 1995] asks "Pledge to affirm each day that 'I am totally responsible for my life, for my attitude, my actions, and my level of consciousness.'" I ask that we each do what we can and not berate ourselves for not doing more, and that we change gradually but persistently. It takes a long time to change the human world because change is created by millions of individual choices. Individuals form into groups and, as Margaret Mead said, "Never doubt that a small group of thoughtful committed citizens can change the world. Indeed, it is the only thing that ever has."

The World of the Future

What will a changed world look like? "We are going to have to want different things, seek different pleasures and pursue different goals than those that have been driving us and our global economy" [Joanna Macy – "The Great Turning", Earth Matters (newsletter of the Northwest Earth Institute) 4(4):1-2, 1997]. But the way to a truly sustainable ecocentric future is not clear, therefore many changes and many potential solutions need to be tried. Every action that goes in the desired direction is necessary. There is no one right answer and there is no technofix, no sure cure. So we should not get bogged down in deciding what is "best".

Does Ecoshift require the destruction of capitalism? Some people obviously think so, *but I am not sure. Although capitalism may prove unsupportable in the absence of fossil energy, I hope instead that we can separate what is good from what is bad in capitalism and add some socialism back in. Socialism, after all, is simply being socially responsible, which is caring about one's personal impact on others.* Money as a medium of exchange is not the problem *per se* and ownership of a business is not the problem *per se*. The greed that leads to huge size of businesses is a problem. The sole goal of profit to owners/managers is a problem. Lack of respect for workers, cultures, and Earth systems is a problem. Ecoshift will see the public will broadening the purpose of "business" to promotion of stability (as opposed to growth) and of just community (as opposed to pursuit of monetary wealth). We will not see a return to primitive life, but will be more judicious in what we do.

People will applaud a variety of actions/choices that are now looked down upon as "different" or even strange:

- eating vegetarian
- being childless
- using human-powered transportation
- downsizing home
- ignoring advertising
- buying local products at a higher price
- vacationing locally
- tree-hugging.

Our economy will shift to non-material sectors, especially education and the arts. Education will become a life-time project. Reading will recover its pre-television status. People will work only two or three years out of four. Music, art, theater, and dance will take center stage. Food production will shift back to local human labor with potential involvement of all of us in growing some of our own food. Sports will become more local, participatory, and equipment-free. Living spaces will be condensed. There will be no more wars, partly because there will be no more fossil fuel to run them.

Humans will relearn ways to "have fun" without expensive and fossil-energy based equipment. Humans will relearn the arts of music-making, conversation, and long walks. Humans will relearn natural history with its connection to nature and the joys it brings.

But all these changes will still not solve the basic issue of humanity's domination and destruction of people and of nature. The third principle of deep ecology says "The flourishing of human life and cultures is compatible with a substantially smaller human population. The flourishing of non-human life requires a smaller human population." As described in the Population chapter, a world population of one billion

people may be able to live a quality existence without destroying Earth's systems and while leaving half of Earth for other species and landscapes to evolve as free as possible from human interference. Such a population is possible with one-child families for a hundred years. *Humanity needs to recognize that* ***nothing*** *is sustainable unless we reduce human population to a billion or less.* Only when human population is small enough that there is "enough" for everybody will the desire to become more affluent while others become poorer go away.

In keeping with the spirit of ECOSHIFT even this concluding chapter connects to further reading. "A Manifesto for Earth" by Ted Mosquin and Stan Rowe on their Ecospheric Ethics web site summarizes the concepts of ecocentrism and Ecoshift in a different way than I have done in this book. A 2007 conference, titled "Toward a New Consciousness: Values to Sustain Human and Natural Communities", generated a downloadable summary publication that details a variety of methodologies for promotion of Ecoshift. Finally, Duane Elgin's "Awakening Earth" takes a long-range look at the past, present and future of human evolution. His Awakening Earth web site includes several videos and talks, including "Is Humanity Growing Up?", which portrays widespread agreement that humanity is only in its teen-age years. Elgin makes a deeply positive statement that we have to move through the current (adolescent) world lifestyle in order to get to a more highly evolved (mature) consciousness. This conscious–ness will move Earth into an Ecozoic Era that justifies humanity as the mind of the Universe, as the Universe becoming aware of itself.

There are many more ways to say what I have said, and much more that has been said by others. Yet, this book must end. All the change described here does not mean that we will achieve the goals of Ecoshift, but if we hope for it we must also strive for it. Ecoshift is an odyssey that continues throughout life. Our future and our grandchildren's future depends on us.

Appendix 1: Books

This appendix lists cited books by author name as underlined in the text For many books I have added comments. My favorite books are marked with ♦.

Abbreviations in brackets indicate the chapters in which the book is cited, according to this table:

art	Green Arts	jus	Ecojustice
bio	Bioregionalism	now	Where We Are Now
clu	Conclusion	pol	Green Politics
con	Conservation Biology	pop	Population Growth
dec	Deep Ecology	rrr	The Three R's
ene	Energy Choices	sim	Voluntary Simplicity
ecp	Ecopsychology	spi	Ecospirituality
fem	Ecofeminism	sri	Socially Responsible Investing
fod	Food Choices	sus	Sustainability
glo	Globalization	tur	The Great Turning
hou	Housing Choices	uni	The Universe Story
int	Introduction		

New books related to ecocentrism are being published frequently, especially by Chelsea Green Publishing, New Society Publishers, and Island Press. In addition, the Schumacher Society has many relevant lectures and essays available as pamphlets or for reading online.

Buying new books supports the authors. Buying used books or using a library supports reuse. Buying locally supports your independent bookseller. If you must use the web try The Simple Living Network, or Powell's Books instead of amazon.com.

Abbey, Edward (1975). The Monkey Wrench Gang. A classic! [art]

Abbey, Edward (1990). Hayduke Lives. Little, Brown, Boston MA. The return of the Monkey Wrench Gang. [dec, art]

Ayres, Ed (1999). God's Last Offer: Negotiating for a Sustainable Future. Four Walls Eight Windows, New York. After discussing the four megatrends (spikes) of carbon gas, extinction, consumption, and population, he assesses the incredible amount of control over our lives exercised by megacorporations and how to reduce it. Somewhat disappointing in that he spends about 250 pages on the problems and only 50 on a fairly shallow discussion of solutions. [now]

Barlow, Connie (1994). Evolution Extended: Biological Debates on the Meaning of Life. MIT Press, Cambridge MA. [uni]

♦ Barlow, Connie (1997). Green Space, Green Time: The Way of Science. Springer-Verlag, New York. Inter-relates conservation biology, the Universe Story, Gaia, deep ecology, and ecospirituality. [con int uni]

Bates, Albert (2006). The Post-Petroleum Survival Guide and Cookbook: Recipes for Changing Times. New Society, Gabriola Island BC. [hou]

♦ Beck, Roy (1996). The Case Against Immigration: The moral, economic, social, and environmental reasons for reducing U.S. immigration back to traditional levels. W.W. Norton, New York. US population is increasing by 1.0 million a year from legal immigration and 1.6 million a year from excess of births over deaths. The unprecedented numbers of immigrants take low-paying jobs from the poor and the minorities who are already here. [pop]

Bellamy, David J. (1983). Bellamy's New World: A Botanical History of America. British Broadcasting Corp. [con]

♦ Berry, Thomas (1988). The Dream of the Earth. Sierra Club, San Francisco. A collection of essays by the leading ecotheologian covers bioregionalism, native-American spirituality, ecotheology, education, the New Story of the universe. A "Bible" for the movement. [dec int jus spi]

Berry, Thomas (1999). The Great Work: Our Way into the Future. Bell Tower, New York. A collection of essays from one of the leading philosophers of the Movement. "We need to move from our human-centered to an earth-centered norm of reality and value. Only in this way can we fulfill our human role within the functioning of the planet we live on." [clu dec]

Beston, Henry (1942). Farrar & Rinehart, New York. The Outermost House: A Year of Life on the Great Beach of Cape Cod. [dec uni]

Blood, Peter and Annie Patterson (1992). Rise Up Singing: The Group Singing Songbook. Sing Out Corp., Bethlehem PA. Contains a variety of environmental, nature, peace, and work songs. [art]

Brill, Hal, Jack A. Brill, and Cliff Feigenbaum (1999). Investing With Your Values: Making Money and Making a Difference. Bloomberg Press, Princeton NJ. If you have any money invested anywhere, get this book! Everything you want to know about socially-responsible investing. [sri]

Bowen, Mark (2008). Censoring Science: Inside the Political Attack on Dr. James Hansen and the Truth Of Global Warming. Dutton Books, New York. How the Bush adminstration endeavoured to muzzle Dr. James Hansen, the government scientist who analyzes global temperature trends. [now]

Brockelman, Paul (1999). Cosmology and Creation: The Spiritual Significance of Contemporary Cosmology. Oxford University Press, New York. [uni spi]

Brody, Hugh (1982). Maps and Dreams. Pantheon, New York. The effects of recent development on Native Americans in British Columbia [jus]

Broome, Jon (2007). The Green Self-build Book: How to Design and Build Your Own Eco-home. Green Books, U.K. [hou]

Brower, Michael and Warren Leon (1999). The Consumer's Guide to Effective Environmental Choices: Practical Advice from the Union of Concerned Scientists. Three Rivers Press, New York. A comprehensive look at the full range of modern consumer activities, identifying those that cause the most environmental damage and those that cause the least. [sus]

Brown, Lester (2001). Eco-Economy: Building an Economy for the Earth. Norton. What we need to do to ensure a livable planet and how some countries are ahead of the U.S. in doing it. [tur]

Brown, Lester R. (2008). Plan B 3.0: Mobilizing to Save Civilization. Earth Policy Institute, Washington DC. [tur]

Callenbach, Ernest (1975). Ecotopia. Bantam Books, New York. Classic novel of the Pacific Northwest after it secedes from the rest of the country. It's easy to dream about living in such a wonderful future. Don't be put off by the 70's sexuality. [art]

Callenbach, Ernest (1981). Ecotopia Emerging. Banyan Tree Books, Berkeley CA. The founding of Ecotopia. The Pacific Northwest secedes from the US, thanks partly to a teenager's discovery of an efficient home-made solar cell. A bit far-fetched, and not very well-written. But if any of you think you can write a better novel about how we can get out of this mess, please, please, please do it. [art]

Calloway, Colin G., ed. (1991). Dawnland Encounters: Indians and Europeans in Northern New England. University Press of New England, Hanover NH. A collection of writings by both sides about the European invasion of my bioregion. [bio]

Capra, Fritjof (1982). The Turning Point: Science, Society, and the Rising Culture. Simon and Schuster, New York. [dec]

Capra, Fritjof (1996). The Web of Life: A New Scientific Understanding of Living Systems. [uni]

Carroll, John E. and Keith Warner, eds. (2000). Ecology and Religion: Scientists Speak. Franciscan Press, Quincy IL. [spi]

♦ Carroll, John, Paul Brockelman, and Mary Westfall, eds. (1997). The Greening of Faith. Essays from a conference "God, the Environment, and the Good Life" held at the University of New Hampshire. A wide variety of religious views include aspects of ecocentrism. A very encouraging book. [int spi]

Carson, Rachel (1962). Silent Spring. Houghton-Mifflin, New York. [con]

Charbonneau, Louis (1991). The Ice. Pocket Books, New York. Ecocentric biologists versus anthropocentric developers in Antarctica. [art]

Commoner, Barry (1971). The Closing Circle: Nature, Man, and Technology. Alfred A. Knopf, New York. A classic on the need for sustainability. [pol sus]

Conkling Philip W., ed. (1995). From Cape Cod to the Bay of Fundy: An Environmental Atlas of the Gulf of Maine. The MIT Press, Cambridge MA. An excellent and beautiful education about the Gulf of Maine bioregion and how it works. Satellite images provide many kinds of information. [bio]

Daly, Herman E. (1996). Beyond Growth: The Economics of Sustainable Development. Beacon Press, Boston. [sus]

Darley, Julian (2004). High Noon for Natural Gas: The New Energy Crisis. Chelsea Green, White River Jct. VT. [ene]

Deffeyes, Kenneth (2005). Beyond Oil: The View from Hubbert's Peak. Hill and Wang, New York. [ene]

Devall, Bill, and George Sessions (1985). Deep Ecology: Living as if Nature Mattered. Gibbs M. Smith, Salt Lake City UT. [dec]

Diamond, Irene, and Gloria Feman Orenstein, eds. (1990). Reweaving the World: The Emergence of Ecofeminism. Sierra Club Books, San Francisco. A collection of essays on various aspects of feminism as it relates to the issues covered on these web pages. [fem]

♦ Dominguez, Joe and Vicki Robin (1992). Your Money or Your Life: Transforming Your Relationship With Money and Achieving Financial Independence. Second edition. The classic book on changing your spending

habits by reducing your "wants", so you can save and invest for an early retirement from money-grubbing. [sim sri]

Donahue, Brian, and Wes Jackson (2001). Reclaiming the Commons: Community Farms and Forests in a New England Town. Yale University Press, 2001. [fod]

Drengson, Alan, and Yuichi Inoue (1995). The Deep Ecology Movement: An Introductory Anthology. North Atlantic Books, Berkeley CA. Most of these essays are heavy going, but I like "For a Radical Ecocentrism" by Andrew McLaughlin. [dec]

Eckersley, Robyn (1992). Environmentalism and Political Theory: Toward an Ecocentric Approach. State University of New York Press, Albany NY. The impact of environmentalism upon contemporary political thought. Disentangles the various strands of Green politics. [pol]

Ehrenfeld, David (1978). The Arrogance of Humanism. Oxford University Press. Classic attack on humanism as anthropocentric. [dec]

Eisler, Riane (1987). The Chalice and the Blade: Our History, Our Future. Harper One, San Francisco. The classic in feminist herstory. [fem uni]

Elder, John (1998). Reading the Mountains of Home. Harvard University Press, Cambridge MA. An exploration of the natural and human history of mountains around Bristol, Vermont is tied to Robert Frost's poem "Directive". This is an excellent example of bioregional writing that would be nice to emulate for every sub-bioregion. [bio]

♦ Elgin, Duane (1993). Voluntary Simplicity: Toward a Way of Life That is Outwardly Simple, Inwardly Rich. 2nd edition. William Morrow, New York. Originally published in 1981 this is a classic. It shows how simplifying the externals of life goes hand-in-hand with a richer, simpler inward life. Reducing one's supposed "needs" for money and material objects allows greater time for contact with people and Earth. [sim]

♦ Elgin Duane (1993). Awakening Earth: Exploring the Evolution of Human Culture and Consciousness. William Morrow, New York. A long-range view of human evolution, past, present, and future, which holds out hope that we need to pass through the current fourth stage, the scientific-industrial era before we can move on through higher levels of consciousness to a truly global, mindful, sustainable, human civilization existing within a natural world. Read this book for a hopeful and satisfying vision of where we can go if we choose. [clu sim spi]

Elgin, Duane (2000). Promise Ahead: A Vision of Hope and Action for Humanity's Future. Harper-Collins NY. [clu]

Elgin, Duane and Coleen LeDrew (1997). Global Consciousness Change: Indicators of an Emerging Paradigm. Millennium Project, San

Rafael CA. A booklet that shows how things are beginning to change. Also includes a study circle guide. Order from The Simple Living Network - see above. [tur]

Elliot, Robert (1997). Faking Nature: The Ethics of Environmental Restoration. Routledge. This looks heavy but good and may continue my discussion on restoration ecology. [con]

Fisher, Andy (2002). Radical Ecopsychology: Psychology in the Service of Life. SUNY Press. [ecp]

Flores, H.C. (2006). Food Not Lawns: How to Turn Your Yard into a Garden and Your Neighborhood into a Community. Chelsea Green, White River Jct. VT. [fod]

♦ Fodor, Eben (1999). Better, Not Bigger: How to Take Control of Urban Growth and Improve Your Community. New Society, Gabriola Island BC. How "development" destroys local businesses, reduces open space, and raises property taxes, and what communities can do about it by protecting land. [sus]

Gelbspan, Ross (1997). The Heat Is On: The High Stakes Battle over Earth's Threatened Climate. Addison-Wesley, Reading MA. A must read for anyone who still doesn't believe in anthropogenic global warming. Accurately documents that virtually all the scientific "opposition" comes from only about 6 scientists who repeatedly get "equal time" with the many thousands of scientists who are seriously concerned. [now]

Goodenough, Ursula (1998). The Sacred Depths of Nature. Oxford University Press, New York. [spi]

Gottlieb, Robert (2001). Environmentalism Unbound: Exploring New Pathways for Change. MIT Press, Cambridge MA. Urges environmentalists to add health, food, and safety to their U.S. agendas. [jus]

Gore, Al (1992). Earth in the Balance: Ecology and the Human Spirit. Houghton- Mifflin, Boston. He lost the Presidency because in eight years as Vice-President he didn't say much about the call for change that's in his book. [now]

Grant, Lindsay (2005). The Collapsing Bubble: Growth and Fossil Energy. Seven Locks Press, Santa Ana, California. Includes need to greatly reduce population. [ene]

Hallman, David G., ed. (1994). Ecotheology: Voices from South and North. Orbis Books, Maryknoll NY. The Bible, ecofeminism, creation stories, liberation theology. [spi]

Hartmann, Thom (2004). The Last Hours of Ancient Sunlight: The Fate of the World and What We Can Do Before It's Too Late. Three Rivers Press, New York. Ecology, energy, and population. [ene]

Harvey, Graham (2005). Animism: Respecting the Living World. Hurst, UK. [spi]

Hawken, Paul (1993). The Ecology of Commerce: A Declaration of Sustainability. Harper Business, NYC. A classic in the business of sustainability. He proposes taxes on products having environmental impacts, with the income used for Earth restoration. [glo sus]

♦ Hawken, Paul (2007). Blessed Unrest: How the Largest Movement in the World Came into Being and Why No One Saw It Coming. Viking, New York. Describes the world-wide, unnamed, grass-roots movement that combines environmental and social justice action by perhaps millions of local organizations. [bio con int jus pol tur]

Hawkins ,Howie, ed. (2006). Independent Politics: The Green Party Strategy Debate. Haymarket Books, Chicago. [pol]

Hays, Samuel (2006). Wars in the Woods: The Rise of Ecological Forestry in America. University of Pittsburgh Press. Describes the continuing fight between so-called "professional foresters" trained in commodity production and "ecosystem managers" trained in ecological function, a microcosm of anthropocentric versus ecocentric thinking. [con sus tur]

Heal, Geoffrey (2000). Nature and the Marketplace: Capturing the Value of Ecosystem Services. Island Press, Washington DC. [sus]

Heinberg, Richard (2004). Powerdown: Options and Actions for a Post-carbon World. New Society, Gabriola Island BC. [ene]

Heinberg, Richard (rev. 2005). The Party's Over: Oil, War and the Fate of Industrial Societies. New Society, Gabriola Island BC. [ene]

Hendrich, Paula (1978). The Girl Who Slipped Through Time. Lothrop, Lee and Shepard, New York. A girl from Earth after the Ecowar finds herself back in 1934. This Weekly Reader book for youth has a surprising amount of deep ecology in it. [art]

Henrick, Richard (1993). Ecowar. Harper Paperbacks, New York. Ecoactivists use a supersubmarine to wage war on humans involved in illegal killing of whales and dolphins. Raises the deep spiritual question of the relative importance of the life of a non-human to the life of a human. [art]

Hightower, Jim (2001). If the Gods Had Meant Us to Vote They Would Have Given Us Candidates (revised). Harper-Collins, New York. Devastating description of how corporations rule politics, America, and

the world. But he provides lots of ideas about what needs to be changed. Much on how Gore lost the election, and it wasn't because of Nader. [pol]

Howe, John G. (2006). The End of Fossil Energy and the Last Chance for Survival. McIntire Publishing, Fryeburg ME. A fine discussion of the energy crisis and its solution, and its connection to climate change and population growth, with lots of web links and book references. [ene]

Isberg, Roger and Sarah (2007). Simple Life: People Meet Nature. Trafford Publishing, Victoria BC. [ecp]

Kaza, Stephanie (1996). The Attentive Heart: Conversations With Trees. Shambala, Boston. [uni]

Kingsolver, Barbara (2007). Animal, Vegetable, Miracle: A Year of Food Life. Harper-Collins, New York. [foo]

Korten, David (1995). When Corporations Rule the World. Kumarian Press. A very influential book. [glo]

Korten, David (1999). The Post-Corporate World: Life After Capitalism. Barrett-Koehler. [sus]

♦ Korten, David C. (2006). The Great Turning: From Empire to Earth Community. Berrett-Koehler Publishers, San Francisco CA, and Kumarian Press, Bloomfield CT. This widely read and recent book describes how we got to where we are now, how nature operates and why we should emulate it, and what a new humanity would look like (Earth Community), but says little either about what individuals can do to help make the transition or about ecocentrism. [bio int glo jus pol tur uni]

Kunstler, James Howard (2008). World Made By Hand. Atlantic Monthly Press, New York. [art]

Leopold, Aldo (1949). A Sand County Almanac. Oxford University Press, Oxford UK; paperback Ballantine, New York. This and Thoreau's Walden are the two originals. [ecp dec]

Littig, Beate (2001). Feminist Perspectives on Environment and Society. Prentice-Hall. A feminist view of the new field of environmental sociology, including discussion of work, consumption, and sustainability. [fem]

Lotter, Donald W. (1993). EarthScore: Your Personal Environmental Audit and Guide. Morning Sun Press, Lafayette CA. Evaluate how you are doing personally in caring for Earth. Assigns points for impact (negative) and action (positive) for various activities. I really like this one because it assigns greater weights for activities with more impact. This is a serious effort to do this right, not just another “100 Things You Can Do”. [sus]

♦ Louv, Richard (2006). Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder. Algonquin Books of Chapel Hill, NC. This really important book describes how our fear of the natural world and our fear for child safety contributes to behavioral problems in children and perhaps in all of us. We all need to reconnect with the natural world in order to be healthy, happy people. [ecp sim spi]

Lovelock, James (1979, 2000). Gaia: A New Look at Life on Earth, 3rd ed., Oxford University Press. [uni]

Low, Alaine M. and Soraya Tremayne, eds. (2002). Sacred Custodians of the Earth?: Women, Spirituality and the Environment. Berghahn Books. [fem]

Macy, Joanna, and Molly Young Brown (1998). Coming Back to Life: Practices to reconnect Our Lives, Our World. New Society, Gabriola Island BC. A collection of exercises for individuals and for workshop leaders to assist in The Great Turning. [dec ecp]

Mander, Gerry (1991). In the Absence of the Sacred: The Failure of Technology and the Survival of the Indian Nations. Sierra Club, San Francisco. A powerful statement of how foolish we humans are to utilize to the utmost every technology we invent without any discussion of the ethics involved. Describes the negative impacts of television, computers, and GMO technology on what used to be sustainable native cultures living in harmony with nature. [dec jus sim]

Marsh, George Perkins (1864). Man and Nature: Or, Physical Geography as Modified by Human Action. Reprinted 1965, Harvard University Press, Cambridge MA. The classic original work about adverse human impact on Earth. [con sus]

McHarg, Ian L. (1969, reprinted 1995). Design With Nature. John Wiley, Hoboken NJ. A wonderful, classic, and recently reprinted effort to alter the way American culture builds its living space. Covers such areas as suburban sprawl, cluster housing, and erosion of beachfront property. A very influential book. [hou dec]

McKibben, Bill (2007). Deep Economy: The Wealth of Communities and the Durable Future. Henry Holt, New York. [bio fod jus ecp]

♦ McKibben, Bill (1998). Maybe One: A Personal and Environmental Argument for Single-child Families. Simon and Schuster. Strong arguments that one-child families benefit the child, the parents, and Earth. Such thinking must become the norm for human population to significantly decrease. [pop]

Meadows, Donella, Dennis Meadows Jorgen Randers, and William Behrens III (1972). The Limits to Growth. Universe Books, New York. Classic and extremely controversial. [sus]

Meadows, Donella, Jorgen Randers, and Dennis Meadows (2004). Limits to Growth: The 30-Year Update. Chelsea Green, White River Jct.

VT. Re-analysis 30 years later shows that the original, very controversial, "Limits to Growth" was fundamentally correct - we are still on an overshoot-collapse path. [sus]

Meeker-Lowry, Susan (1988). Economics as if the Earth Really Mattered: A Catalyst Guide to Socially Conscious Investing. New Society, Gabriola Island BC. [sri]

♦ Melina, Vesanto, Brenda Davis, and Victoria Harrison (1995). Becoming Vegetarian: The Complete Guide to Adopting a Healthy Vegetarian Diet. Book Publishing, Summertown TN. This book briefly gives all the reasons for cutting down on meat and then covers all the ways to do it in detail. It doesn't push any particular viewpoint but provides sound, reasonable information. Proper nutrition is the authors' main goal. [fod]

♦ Merkel, Jim (2003). Radical Simplicity: Small Footprints on a Finite Earth. New Society, Gabriola Island BC. This book provides detailed tools for living more sustainably by calculating a personal ecological footprint, reducing personal wants, and relating to a bioregion. [clu jus pop sim sri]

Mills, Stephanie (1995). In Service of the Wild: Restoring and Rehabilitating Damaged Land. Beacon Press, Boston. [con]

♦ Mitchell, Stacy (2006). Big-box Swindle: The True Cost of Mega-Retailers and the Fight for America's Independent Businesses. Beacon Press, Boston. It's not just Wal-Mart, it's all the chains that are driving locally-owned stores out of business, causing net job loss, reduction of wages, and money outflow from communities. On the positive side are the hundreds of communities that have said **no** to the big-box chains; this is their story. [glo pol tur]

♦ Morgan, Jennifer (2002). Born With a Bang: The Universe Tells Our Cosmic Story. Dawn Publications, Nevada City CA. Book One of the Universe Story for children, from the Big Bang to the formation of Earth. Part story (myth), part facts, and part lovely artwork. My grandchildren like it. [uni]

Morgan, Jennifer (2003). From Lava to Life: The Universe Tells Our Earth Story. Dawn Publications, Nevada City CA. Book Two of the Universe Story for children, from the beginning of life to the extinction of the dinosaurs. [uni]

Morgan, Jennifer (2006). Mammals Who Morph: The Universe Tells Our Evolution Story. Dawn Publications, Nevada City CA. Book Three of the Universe Story for children, the evolution of mammals and humans. [uni]

Myers, Norman (1993). Ultimate Security:The Environmental Basis of Political Stability. W.W. Norton, New York. In our (hopefully) post-nuclear era, environmental issues such as food, water, deforestation, and rich-poor separation will become the most likely causes of political instability and war. [jus]

Gary Paul Nabhan and Stephen Trimble (1994). The Geography of Childhood: Why Children Need Wild Places. Beacon Press, Boston MA. Alternating essays by the two authors about separation of urban, rural, and even indigenous children from all kinds of "wild". They describe how schoolbooks and TV have replaced free outdoor activity in the learning process. Wanders off into gender differences, and failed to have the impact of Louv's book eleven years later. [ecp]

Nattrass, Brian and Mary Altomore (2000). The Natural Step for Business: Wealth, Ecology, and the Evolutionary Corporation. [sus]

Noss, Reed F., and Allen Y. Cooperrider (1994). Saving Nature's Legacy: Protecting and Restoring Biodiversity. Island Press, Washington DC. [con]

Paddock, William and Paul (1968). Famine, 1975! America's Decision: Who Will Survive. Little , Boston. This book got me started talking about population control. The famine got postponed by massive use of fossil fuel for fertilization, irrigation, and mechanization. [fod]

Pearson, David (1998). The New Natural House Book: Creating a Healthy, Harmonious, and Ecologically Sound Home. Simon and Schuster, Riverside NJ. [hou]

Phillips, Kevin (1994). Arrogant Capital: Washington, Wall Street, and the Frustration of American Politics. Little, Brown, Boston. Compares the current takeover of Washington by megacorporations, lobbyists, and lawyers to the causes of national declines in ancient Rome, Hapsburg Spain, and eighteenth-century Holland. He provides ten proposals for how to reverse the trend. [pol]

Pimentel, David and Marcia (1996). Food, Energy, and Society. University Press of Colorado, Boulder. Apparently also population growth. [fod]

Platt, David D., ed. (1998). Rim of the Gulf: Restoring Estuaries of the Gulf of Maine. Island Institute, Rockland ME. Detailed analyses of the conservation biology of all the Gulf estuaries from Cape Cod to Nova Scotia. [bio]

Primack, Joel R. and Nancy Ellen Abrams (2006). The View from the Center of the Universe: Discovering Our Extraordinary Place in the Cosmos. Riverhead Books, New York. In the logarithmic time scale of the universe we are at the center; in the logarithmic size scale of the universe,

we are at the center; in the space of our visible universe we are at the center. The evolutionary story of the universe places Earth and its people at the core of a new creation myth. [uni]

Putnam, Robert (2000). Bowling Alone: The Collapse and Revival of American Community. Simon and Schuster. [jus]

♦ Quinn, Daniel (1992). Ishmael. A novel dialogue in which a very intelligent gorilla teaches a slow-learning human about how Earth works. Features the contrast between "Takers" and "Leavers". This book is probably the most readable introduction to ecocentric concepts, and has had a major impact on a great many people. [dec int tur]

Quinn, Bill (2000). How Wal-Mart is Destroying the World. Ten Speed Press. The biggest global mega-corporation seems determined to control everything we buy, and is doing a good job of getting there. On the way it tramples on local communities and businesses, on employees, on government regulations, on workers in poor countries, on its environment, and on anything else that gets in its way. [glo]

Rankin, Aidan (2006). The Jain Path: Ancient Wisdom for the West. O Books, Winchester, UK. The Jain religion of India has incorporated ecocentric thinking for millennia and can teach many lessons. [int spi]

Ruether, Rosemary Radford (2005). Integrating Ecofeminism, Globalization, and World Religions. Rowman and Littlefield, Lanham MD. [fem]

♦ Roberts, Elizabeth and Elias Amidon, eds. (1991). Earth Prayers from Around the World: 365 Prayers, Poems, and Invocations for Honoring the Earth. Super collection for group openings and church services. [art spi]

Roszak, Theodore, Mary E. Gomes, and Allen D. Kanner, eds.(1995). Ecopsychology: Restoring the Earth, Healing the Mind. Sierra Club, San Francisco. Don't get bogged down at the beginning; skip the essays in which you lose interest. Extensively considers what drives consumerism, advertising, and technological solutions to all life's problems. Alan Durning is excellent. [ecp]

Roszak, Theodore (1993). The Voice of the Earth: An Exploration of Ecopsychology. Simon and Schuster, NY. First use of the term "ecospychology" to describe the relation of human mental health to the natural world. Much broader than the title implies, including ecofeminism, Gaia, deepology, and metaphysics. Difficult for me because of unclear direction and objectives for each chapter. [dec ecp]

Rutherfurd, Edward (2001). The Forest. Ballentine, New York. Fine sense of place novel with bits of ecocentrism here and there. "An oak tree lives in a four-hundred-year time frame. Human time-frames are always too short. So we get it wrong, and we don't really understand the natural processes half the time." [art]

Sanders, Scott Russell (1994). Staying Put: Making a Home in a Restless World. Beacon Press, Boston. [bio]

Scharper, Stephen Bede (1998). Redeeming the Time: A Political Theology of the Environment. Continuum Press, New York. Summarizes ecotheology, including the Gaia hypothesis, process theology, the New Cosmology, ecofeminism, and liberation theology, but misreads deep ecology as implying humans are "irrelevant". [spi]

Schumacher, E.F. (1973). Small is Beautiful: Economics as if People Mattered. A leading economist speaks out against the "growth is good" syndrome and about the value of decentralized economies. A classic. [sus]

Schwab, Jim (1994). Deeper Shades of Green: The rise of blue-collar and minority environmentalism in America. Sierra Club. Describes a number of places where less privileged communities have fought against being dumped on by big corporations and government. [bio jus tur]

Seed, John , Joanna Macy, Pat Fleming, and Arne Naess (1988). Thinking Like a Mountain: Towards a Council of All Beings. New Society, Gabriola Island BC. Deep ecology rituals, including the famous Council of All Beings. [ecp]

Seidel, Peter (1998). Invisible Walls: Why We Ignore the Damage We Inflict on the Planet and Ourselves. Prometheus Books, Amherst NY. Humans have great difficulty practicing what they preach or doing what they know is right. Going along with the crowd apparently provides survival benefits. [clu dec ecp spi]

♦ Sessions, George, ed. (1995). Deep Ecology for the Twenty-first Century: Readings on the Philosophy and Practice of the New Environmentalism. Shambala, Boston. Excellent collection of readings. This book provided my first introduction to my spiritual home. [dec fem]

Shabecoff, Philip (2000). Earth Rising: American Environmentalism in the 21st Century. Island Press, Washington DC. A wake-up call to mainstream environmentalists and their organizations to get more broadly and deeply involved in politics, science, business, and community at all scales. But the book is anthropocentric and misses many aspects of Ecoshift. [con jus]

Snell, Clarke, and Tim Callahan (2005). Building Green: A Complete How-To Guide to Alternative Building Methods. Lark Books, Asheville NC. [hou]

Spaid, Sue (2002). Ecovention: Current Art to Transform Ecologies. Contemporary Arts Center, Cincinatti, OH. [art]

Speart, Jessica (1999). Bird-brained. Avon Books, New York. U.S. Fish and Wildlife agent Rachel Porter takes on illegal bird importers. There are other Rachel Porter mysteries. [art]

Starhawk (1979). The Spiral Dance: Rebirth of the Ancient Religion of the Goddess. Harper and Row, San Francisco. [spi]

St. Clair, Jeffrey (2004). Been Brown So Long It Looked Like Green to Me: The Politics of Nature. Common Courage Press, Monroe ME. Essays on how the big environmental organizations have been co-opted by corporations and politicians. [con pol]

Stein, Sara (1993). Noah's Garden: Restoring the Ecology of Our Own Back Yards. Houghton Mifflin. [con hou]

Stone, Christopher (1996). Should Trees Have Standing? And Other Essays on Law, Morals and the Environment. Oxford University Press, Dobbs Ferry NY. [dec]

Susskind, Leonard (2006). The Cosmic Landscape: String Theory and the Illusion of Intelligent Design. Back Bay Books, New York. The origin of the Universe, the Anthropic Principle, and the concept of strings written so a non-scientist can (almost) understand. [uni]

Swimme, Brian, and Thomas Berry (1992). The Universe Story: From The Primordial Flaring Forth To The Ecozoic Era, A Celebration Of The Unfolding Of The Cosmos. Harper San Francisco. The new creation story, including the supernova Tiamat that created the atoms of which we are made. I particularly like the naming of the first living organisms of different kinds, Aries - the first prokaryote, Promethio - the first photosynthetic cell, Prospero - the first cyanobacterium, then Viking, Engla, Kronos, and Sappho. The book gets less interesting when it summarizes human history, then revitalizes again in the final chapter on the Ecozoic Era. [uni]

Tepper, Sheri S. (1997). The Family Tree. Avon Books, New York. Trees, and other things, take over the world in this strange story of surprises and happenings. It's definitely the good ecoguys vs. the bad guys, but you won't find out how until toward the end. [art]

♦ Wackernagel, Mathis and William Rees (1996). Our Ecological Footprint: Reducing Human Impact on the Earth. New Society, Gabriola Island BC. A detailed analysis showing that it takes ten acres of land to keep one person (that's YOU) living in North American style. [sus]

Waterman, Guy and Laura (2003). Forest and Crag: A History of Hiking, Trailblazing, and Adventure in the Northeast Mountains. Appalachian Mountain Club, Boston MA. [con]

Wessels, Tom (1997). Reading the Forested Landscape: A Natural History of New England. Countryman Press, Woodstock VT. An excellent readable lay discussion of forest ecology for central New England. [bio]

Wilkinson, Todd (1998). Science under Siege: The Politicians' War on Nature and Truth. Johnson Books. The muzzling of government scientists in land management agencies. [now]

Wilkinson, Jeanne C. (2001). The Meetings of WEarth: A Story for Our Times. http://www.environmentalfiction.com. [art]

Wilson, Edward O. (1993). The Diversity of Life. W.W. Norton, New York. [uni]

Wood, Douglas (1999). Grandpa's Prayers of the Earth. Candlewick Press, Cambridge MA. Grandfather and grandson take slow walks in the woods. “Each living thing gives its life to the beauty of all life, and that gift is its prayer.” [art]

Appendix 2: Web Sites

This page lists underlined links in ECOSHIFT in alphabetical order. Personal names are listed by last name. My favorite sites are marked with ♦.

Unlike the stability of printed books, web sites are subject to rapid change. Sites "move" to a different "address" (URL), or are completely rearranged, or disappear altogether. Material once present gets deleted. Therefore I cannot guarantee that web links in ECOSHIFT will contain the subject matter they used to, or even that they still exist.

Abbreviations in brackets indicate the chapters in which the reference is used, according to this table:

art	Green Arts	int	Introduction
bio	Bioregionalism	jus	Ecojustice
boo	Books	now	Where We Are Now
clu	Conclusion	pol	Green Politics
con	Conservation Biology	pop	Population Growth
dec	Deep Ecology	rrr	The Three R's
ene	Energy Choices	sim	Voluntary Simplicity
ecp	Ecopsychology	spi	Ecospirituality
fem	Ecofeminism	sri	Socially Responsible Investing
fod	Food Choices	sus	Sustainability
glo	Globalization	tur	The Great Turning
hou	Housing Choices	uni	The Universe Story

Ace Hardware – www.acehardware.com [glo]
Act Now to Stop War and End Racism – answer.pephost.org [pol]
Adbusters – www.adbusters.org [sim]
Affluenza – www.pbs.org/kcts/affluenza [sim]
Alliance for Democracy – thealliancefordemocracy.org [fod jus]
Alternative Farming Systems Information Center – afsic.nal.usda.gov [fod]
♦ Alternatives for Simple Living – www.simpleliving.org [sim]

American Livestock Breeds Conservancy – www.albc–usa.org [bio]
Dana Lynne Andersen – www.awakeningarts.com [art]
Associated Buyers – www.assocbuyers.com [fod]
Auroville – www.auroville.org [hou]
♦ Awakening Earth – www.awakeningearth.org [sim]
Thomas Berger – www.greenart.com [art]
♦ Best Foot Forward – www.bestfootforward.com [sus]
Bioneers Conference – www.bioneers.org [tur]
Bioregional Congress – www.bioregional–congress.org [bio]
Blue Link Solar Network – www.bluelinksolar.com [ene]
Bonneville Environmental Foundation - www.b-e-f.org [ene]
Boston Green Tourism – www.bostongreentourism.org [fod]
Breeding Bird Survey – www.pwrc.usgs.gov/bbs/ [con]
Building Materials Reuse Association – www.buildingreuse.org [hou]
Business Alliance for Local Living Economies – www.livingeconomies.org [glo sus]
Calvert Funds – www.calvert.com [sri]
Cambridge Cohousing – www.cambridgecohousing.org [hou]
Carbonfund – www.carbonfund.org [ene]
♦ The Carrying Capacity Network – 198.173.225.169 [pop]
Catalog Choice – www.catalogchoice.org [sim]
Center for Democracy and Technology – Opt Out – opt–out.cdt.org [sim]
♦ Center for a New American Dream – www.newdream.org [sus]
Center for Global Research – www.globalresearch.ca [pol]
Center for Respect of Life and Environment – www.center1.com [spi]
♦ The Center for the Story of the Universe – www.brianswimme.org
Ceres Coalition – www.ceres.org [sus]
Chelsea Green Publishing – www.chelseagreen.com [boo]
Chicago Climate Exchange – www.chicagoclimatex.com [ene]
♦ Children and Nature Network – www.childrenandnature.org [ecp]
Chittenden Bank – www.chittenden.com [sri]
Circle of Simplicity – www.cecileandrews.com [sim]
Clean Air – Cool Planet – www.cleanair–coolplanet.org [ene]
Climatecare – www.climatecare.org [ene]
♦ Co–op America – www.coopamerica.org [jus sri sus]
Co–op America Green Pages – www.greenpages.org [sus]
Co–op America Sweatshops Page – www.sweatshops.org [jus]
Covenant of Unitarian Universalist Pagans – www.cuups.org [spi]
Defending Water for Life in Maine – defendingwaterinmaine.org [fod]
Direct Marketing Association – www.dmachoice.org [sim]
Domini Social Index – www.domini.com/indexGM.html [sri]
E: the Environmental Magazine – E: the Environmental Magazine [tur]
Earth Charter – www.earthcharterus.org [jus]
Earth Education – www.eartheducation.com [sus]
Earthlands – www.earthlands.org [hou]
EarthLight – www.earthlight.org [tur]

Earth Ministry – www.earthministry.org [spi]
EarthSave International – www.earthsave.org [fod]
EBay – www.ebay.com [rrr]
Ecofem.org – www.ecofem.org [fem]
Ecofeminist Resources – www.ecofeminism.net [fem]
Ecofeminist Philosophy Data Base – www.erraticimpact.com/~ecofeminism/ [fem]
Ecofuture – www.ecofuture.org [pop]
Economic Policy Institute Ecopsychology On–line – ecopsychology.athabascau.ca [ecp]
♦ Ecospheric Ethics – www.ecospherics.net [dec int pop clu]
Ecovention – http://www.greenmuseum.org/c/ecovention/intro_frame.html [art]
Ecovillage at Ithaca – www.ecovillage.ithaca.ny.us [hou]
Ecumenical Patriarch of the Orthodox Church – www.ec–patr.org [spi]
Empowerment Institute – empowermentinstitute.net [sim]
Energy Information Administration – www.eia.doe.gov [ene]
Environmentalists Against War – www.envirosagainstwar.org [pol]
Environmental Protection Agency – Green Buildings – www.epa.gov/greenbuilding/ [hou]
Epic of Evolution – www.epicofevolution.com [ecp]
Equal Exchange Coffee – www.equalexchange.coop [fod]
Ethical Consumer Research Association – www.ethicalconsumer.org [jus]
Eve Online – eve.enviroweb.org [fem]
Facing the Future – www.facingthefuture.org [jus]
The Farm – www.thefarmcommunity.com [hou]
Ferry Beach Park Association – www.ferrybeach.org [int]
Financial Integrity – www.financialintegrity.org [sim]
Findhorn Ecovillage – www.ecovillagefindhorn.org [hou]
Fix–ya.com – www.fixya.com [rrr]
Forest Guild – www.forestguild.org [dec]
Forest Stewardship Council – www.fscus.org [con sus]
Forum on Religion and Ecology – fore.research.yale.edu [spi]
Foundation for Deep Ecology – www.deepecology.org [dec]
Foundation for Global Community – www.globalcommunity.org [ecp]
Freeconomy Community – www.justfortheloveofit.org [jus]
Freecycle – www.freecycle.org [rrr]
FTSE4Good – www.ftse.com [sri]
Fund for Christian Ecology – www.christianecology.org [spi]
Genesis Farm – www.genesisfarm.org [dec]
Global Awareness, Local Action – www.galacommunity.org [sus]
Global Ecovillage Network – gen.ecovillage.org [hou]
Global Exchange – www.globalexchange.org [sus]
Global Living Project – www.radicalsimplicity.org [sus]
The Global Policy Forum – www.globalpolicy.org [pol]
Jane Goodall Institute – www.janegoodall.org [tur]

Grameen Bank – www.grameen–info.org [sri]
Granite Earth Institute – www.graniteearth.org [bio sim]
The Great Story – www.thegreatstory.org [ecp]
Greek Orthodox Archdiocese of America – www.goarch.org [spi]
Green Art Guide – www.greenart.info [art]
U.S. Green Building Council – www.usgbc.org [hou]
Green Money Journal – www.greenmoneyjournal.com [sri]
The Green Office – www.thegreenoffice.com [rrr]
Green Party of New Jersey – www.gpnj.org [pol]
Green Party of the U.S. – www.gp.org [pol]
Green Restaurant Association – www.dinegreen.com [fod]
The Greens – www.greens.org [pol]
Greens/Green Party USA – www.greenparty.org [pol]
Greenseat – www.greenseat.com [ene]
The Gulf of Maine Council on the Marine Environment – www.gulfofmaine.org [bio]
Happy Planet Index – www.happyplanetindex.org [tur]
Heifer International – www.heifer.org [dec]
Hooked On Nature – hookedonnature.org [bio]
HubbleSite – hubblesite.org [uni]
Hubble Information Center – www.spacetelescope.org [uni]
An Inconvenient Truth – www.an–inconvenient–truth.com [ene now]
Institute for Earth Education – www.eartheducation.com [sus]
Interface – www.interfaceglobal.com [rrr]
International Community for Ecopsychology – www.ecopsychology.org [ecp]
International Dark Sky Association – www.darksky.org [dec]
Intentional Communities – www.ic.org [hou]
Island Press – www.islandpress.org [boo]
Chris Jordan – www.chrisjordan.com [art]
Land Trust Alliance – www.landtrustalliance.org [con]
Laura Lind – www.lauralind.com [art]
Low Impact Living – www.lowimpactliving.com [sus]
Joanna Macy – www.joannamacy.net [art]
Maine Interfaith Power and Light – www.meipl.org [ene]
Maine Wolf Coalition – home.acadia.net/mainewolf/ [con]
Marathon Heaters – www.marathonheaters.com [rrr]
Marine Stewardship Council – www.msc.org [con]
Martin Hill – www.martin–hill.com [art]
Matt Kenyon – www.illo.co.uk [art]
Ross McCluney – home.vicnet.net.au/~aespop/maxpop.html [pop]
McIntire Publishing – www.mcintirepublishing.com [boo]
The Meetings of WEarth – www.environmentalfiction.com [art]
Ministry for Earth – uuministryforearth.org [art spi]
Jennifer Morgan – www.universestories.com [art uni]
Move On – www.moveon.org [pol]

Naropa University – www.naropa.edu [ecp]
National Audubon Society – www.audubon.org [fod]
National Campaign for Sustainable Agriculture – www.sustainableagriculture.net [fod]
National Do Not Call Registry – www.donotcall.gov [sim]
National Invasive Species Information Center – www.invasivespeciesinfo.gov [con]
♦ National Religious Partnership for the Environment – www.nrpe.org [spi]
National Renewable Energy Laboratory – www.nrel.gov [ene]
Natural Playgrounds Company – www.naturalplaygrounds.com [ecp]
Natural Resources Defense Council – www.nrdc.org [pol]
♦ Natural Step – www.naturalstep.org [sri sus]
♦ Negative Populaton Growth – www.npg.org [pop sus]
New Alternatives Fund – www.newalternativesfund.com [sri]
New Dimensions – www.newdimensions.org [dec]
New Hampshire Community Loan Fund – www.theloanfund.org [sri]
New Party – www.newparty.org [pol]
New Society Publishers – www.newsociety.com [boo]
Northern New England Bioneers Conference – www.kindledinme.com [bio tur]
♦ Northwest Earth Institute – www.nwei.org [clu dec glo int sim]
♦ NumbersUSA – www.numbersusa.com [pop]
O Books – www.o–books.com [spi]
Ocean Arks International – www.oceanarks.org [sus]
OptOutPrescreen – www.optoutprescreen.com [sim]
Organic Consumers Association – www.organicconsumers.org [fod]
Orion Magazine – www.orionmagazine.org [tur]
Greg Patch – www.greenartstudio.com [art]
Pax World Funds – www.paxworld.com [sri]
Peace Resource Project – www.peaceproject.com [pol]
People for the Ethical Treatment of Animals – www.peta.org [dec fod]
Planet Aid – www.planetaid.org [rrr]
Planet Drum – planetdrum.org [bio]
Michael Pollan – www.michaelpollan.com [fod]
Project Nature Connect – www.ecopsych.com [ecp]
Population Communications International – www.population.org [pop]
♦ Population Reference Bureau – www.prb.org [pop]
Portfolio21 – www.portfolio21.com [sri]
Powell's Books – www.powells.com [boo]
♦ Margaret RainbowWeb – www.users.on.net/~arachne/index.html [dec spi]
Rainforest Information Center – www.rainforestinfo.org.au [dec ecp uni]
Range Biome – www.rangebiome.org [con]
Real Goods – www.realgoods.com [sim]
Reclaim Democracy – www.reclaimdemocracy.org [sus]

♦ Redefining Progress – www.rprogress.org [sus]
Religious Witness for the Earth – www.religiouswitness.org [spi]
♦ Resurgence – www.resurgence.org [art dec jus now sim spi tur]
RESTORE: The North Woods – www.restore.org [con]
Rivers and Tides – www.riversandtides.co.uk [art]
Save Our Groundwater – www.saveourgroundwater.org [fod]
Schumacher Society – www.smallisbeautiful.org [boo sus tur]
Seize the Day – www.seizetheday.org [art]
♦ Shop for America – www.shopforamerica.com [sus]
Shopping for a Better World – www.shoppingforabetterworld.com [sus]
Shore Bank – www.sbk.com [sri]
♦ Simple Living Network – www.simpleliving.net [boo sim]
Slow Food International – www.slowfood.com [fod]
Smithsonian National Zoo– nationalzoo.si.edu [fod]
Social Investment Forum – www.socialinvest.org [sri]
SolarWorks – www.solar–works.com [ene]
Subway – www.subway.com [fod glo]
Sunweaver – www.sunweaver.org [ene]
Sustainable Eating Magazine – www.semagazine.com [fod]
Sustainable Forest Initiative – www.sfiprogram.org [sus]
Sustainable Harvest International – www.sustainableharvest.org [jus]
♦ Brian Swimme – www.brianswimme.org [uni]
Synthesis/Regeneration Magazine – www.greens.org/s–r/ [pol]
Target Earth – www.targetearth.org [spi]
TerraPass – www.terrapass.com [ene]
The Timber Wolf Alliance – www.discoverycenter.net/twa.htm [con]
Timeline – www.globalcommunity.org/timeline/index.shtml [clu sus tur]
Tom's of Maine – www.tomsofmaine.com/mission/stmt_blf.htm [tur]
Toward a New Consciousness –
www.environment.yale.edu/newconsciousness [clu]
Treecycle – www.treecycle.com [rrr]
Trees for Life – www.treesforlife.org.uk [con]
Tufts University Office of Sustainability – sustainability.tufts.edu [ene]
Rick Ross Tvind page – www.rickross.com/groups/tvind.html [rrr]
Tvind Alert – www.tvindalert.com [rrr]
UNESCO's Man and the Biosphere Program –
www.unesco.org/mab/mabProg.shtml [con]
Union of Concerned Scientists – www.ucsusa.org [uni]
United Buying Clubs – www.unitedbuyingclubs.com [fod]
USDA Food Guidelines – www.mypyramid.gov [fod]
USDOE Fossil Fuel – www.fossil.energy.gov [ene]
The Utne Reader – www.utne.com [jus tur]
Valley Originals – www.thevalleyoriginals.com [fod]
Michael Vandeman – home.pacbell.net/mjvande/ [con]
Wakeupwalmart.com – www.wakeupwalmart.com [glo]
Web of Creation – www.webofcreation.org [spi]

Wikipedia – en.wikipedia.org [con jus sus pol]
The Wildlands Project – www.wildlandsproject.org [bio con]
Jim Williams – www.bbparkslope.com/jim/ [for]
Working Families Party – www.workingfamiliesparty.org [pol]
World Ark – www.heifer.org [con]
World Drum – www.theworlddrum.com [art]
A World Institute for a Sustainable Humanity – www.awish.net [sus]
YES! A Journal of Positive Futures – www.futurenet.org [tur]
Bob Zentz – www.bobzentz.com [art]

Appendix 3: The Earth Charter

Preamble

We stand at a critical moment in Earth's history, a time when humanity must choose its future. As the world becomes increasingly interdependent and fragile, the future at once holds great peril and great promise. To move forward we must recognize that in the midst of a magnificent diversity of cultures and life forms we are one human family and one Earth community with a common destiny. We must join together to bring forth a sustainable global society founded on respect for nature, universal human rights, economic justice, and a culture of peace. Towards this end, it is imperative that we, the peoples of Earth, declare our responsibility to one another, to the greater community of life, and to future generations.

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 of all peoples. The protection of Earth's vitality, diversity, and beauty is a sacred trust.

The Global Situation

The dominant patterns of production and consumption are causing environmental devastation, the depletion of resources, and a massive extinction of species. Communities are being undermined. The benefits of development are not shared equitably and the gap between rich and poor is widening. Injustice, poverty, ignorance, and violent conflict are widespread and the cause of great suffering. An unprecedented rise in human population has overburdened ecological and social systems. The foundations of global security are threatened. These trends are perilous – but not inevitable.

The Challenges Ahead

The choice is ours: form a global partnership to care for Earth and one another or risk the destruction of ourselves and the diversity of life. Fundamental changes are needed in our values, institutions, and ways of living. We must realize that when basic needs have been met, human development is primarily about being more, not having more. We have the knowledge and technology to provide for all and to reduce our impacts on the environment. The emergence of a global civil society is creating new opportunities to build a democratic and humane world. Our environmental, economic, political, social, and spiritual challenges are interconnected, and together we can forge inclusive solutions.

Universal Responsibility

To realize these aspirations, we must decide to live with a sense of universal responsibility, identifying ourselves with the whole Earth community as well as our local communities. We are at once citizens of different nations and of one world in which the local and global are linked. Everyone shares responsibility for the present and future well-being of the human family and the larger living world. The spirit of human solidarity and kinship with all life is strengthened when we live with reverence for the mystery of being, gratitude for the gift of life, and humility regarding the human place in nature. We urgently need a shared vision of basic values to provide an ethical foundation for the emerging world community. Therefore, together in hope we affirm the following interdependent principles for a sustainable way of life as a common standard by which the conduct of all individuals, organizations, businesses, governments, and transnational institutions is to be guided and assessed.

Principles

I. Respect And Care For The Community Of Life

1. Respect Earth and life in all its diversity.
Recognize that all beings are interdependent and every form of life has value regardless of its worth to human beings.
Affirm faith in the inherent dignity of all human beings and in the intellectual, artistic, ethical, and spiritual potential of humanity.

2. Care for the community of life with understanding, compassion, and love.
Accept that with the right to own, manage, and use natural resources comes the duty to prevent environmental harm and to protect the rights of people.

Affirm that with increased freedom, knowledge, and power comes increased responsibility to promote the common good.

3. Build democratic societies that are just, participatory, sustainable, and peaceful.
Ensure that communities at all levels guarantee human rights and fundamental freedoms and provide everyone an opportunity to realize his or her full potential.
Promote social and economic justice, enabling all to achieve a secure and meaningful livelihood that is ecologically responsible.

4. Secure Earth's bounty and beauty for present and future generations.
Recognize that the freedom of action of each generation is qualified by the needs of future generations.
Transmit to future generations values, traditions, and institutions that support the long-term flourishing of Earth's human and ecological communities.

In order to fulfill these four broad commitments, it is necessary to:

II. Ecological Integrity

5. Protect and restore the integrity of Earth's ecological systems, with special concern for biological diversity and the natural processes that sustain life.
Adopt at all levels sustainable development plans and regulations that make environmental conservation and rehabilitation integral to all development initiatives.
Establish and safeguard viable nature and biosphere reserves, including wild lands and marine areas, to protect Earth's life support systems, maintain biodiversity, and preserve our natural heritage Promote the recovery of endangered species and ecosystems.
Control and eradicate non-native or genetically modified organisms harmful to native species and the environment, and prevent introduction of such harmful organisms.
Manage the use of renewable resources such as water, soil, forest products, and marine life in ways that do not exceed rates of regeneration and that protect the health of ecosystems.
Manage the extraction and use of non-renewable resources such as minerals and fossil fuels in ways that minimize depletion and cause no serious environmental damage.

6. Prevent harm as the best method of environmental protection and, when knowledge is limited, apply a precautionary approach.
Take action to avoid the possibility of serious or irreversible environmental harm even when scientific knowledge is incomplete or inconclusive.

Place the burden of proof on those who argue that a proposed activity will not cause significant harm, and make the responsible parties liable for environmental harm.
Ensure that decision making addresses the cumulative, long-term, indirect, long distance, and global consequences of human activities.
Prevent pollution of any part of the environment and allow no build-up of radioactive, toxic, or other hazardous substances.
Avoid military activities damaging to the environment.

7. Adopt patterns of production, consumption, and reproduction that safeguard Earth's regenerative capacities, human rights, and community well-being.
Reduce, reuse, and recycle the materials used in production and consumption systems, and ensure that residual waste can be assimilated by ecological systems.
Act with restraint and efficiency when using energy, and rely increasingly on renewable energy sources such as solar and wind.
Promote the development, adoption, and equitable transfer of environmentally sound technologies.
Internalize the full environmental and social costs of goods and services in the selling price, and enable consumers to identify products that meet the highest social and environmental standards.
Ensure universal access to health care that fosters reproductive health and responsible reproduction.
Adopt lifestyles that emphasize the quality of life and material sufficiency in a finite world.

8. Advance the study of ecological sustainability and promote the open exchange and wide application of the knowledge acquired.
Support international scientific and technical cooperation on sustainability, with special attention to the needs of developing nations.
Recognize and preserve the traditional knowledge and spiritual wisdom in all cultures that contribute to environmental protection and human well-being.
Ensure that information of vital importance to human health and environmental protection, including genetic information, remains available in the public domain.

III. Social And Economic Justice

9. Eradicate poverty as an ethical, social, and environmental imperative.
Guarantee the right to potable water, clean air, food security, uncontaminated soil, shelter, and safe sanitation, allocating the national and international resources required.
Empower every human being with the education and resources to secure a sustainable livelihood, and provide social security and safety nets for those who are unable to support themselves.

Recognize the ignored, protect the vulnerable, serve those who suffer, and enable them to develop their capacities and to pursue their aspirations.

10. Ensure that economic activities and institutions at all levels promote human development in an equitable and sustainable manner.
Promote the equitable distribution of wealth within nations and among nations.
Enhance the intellectual, financial, technical, and social resources of developing nations, and relieve them of onerous international debt.
Ensure that all trade supports sustainable resource use, environmental protection, and progressive labor standards.
Require multinational corporations and international financial organizations to act transparently in the public good, and hold them accountable for the consequences of their activities.

11. Affirm gender equality and equity as prerequisites to sustainable development and ensure universal access to education, health care, and economic opportunity.
Secure the human rights of women and girls and end all violence against them.
Promote the active participation of women in all aspects of economic, political, civil, social, and cultural life as full and equal partners, decision makers, leaders, and beneficiaries.
Strengthen families and ensure the safety and loving nurture of all family members.

12. Uphold the right of all, without discrimination, to a natural and social environment supportive of human dignity, bodily health, and spiritual well-being, with special attention to the rights of indigenous peoples and minorities.
Eliminate discrimination in all its forms, such as that based on race, color, sex, sexual orientation, religion, language, and national, ethnic or social origin.
Affirm the right of indigenous peoples to their spirituality, knowledge, lands and resources and to their related practice of sustainable livelihoods.
Honor and support the young people of our communities, enabling them to fulfill their essential role in creating sustainable societies.
Protect and restore outstanding places of cultural and spiritual significance.

IV. Democracy, Nonviolence, And Peace

13. Strengthen democratic institutions at all levels, and provide transparency and accountability in governance, inclusive participation in decision making, and access to justice.

Uphold the right of everyone to receive clear and timely information on environmental matters and all development plans and activities which are likely to affect them or in which they have an interest.
Support local, regional and global civil society, and promote the meaningful participation of all interested individuals and organizations in decision making.
Protect the rights to freedom of opinion, expression, peaceful assembly, association, and dissent.
Institute effective and efficient access to administrative and independent judicial procedures, including remedies and redress for environmental harm and the threat of such harm.
Eliminate corruption in all public and private institutions.
Strengthen local communities, enabling them to care for their environments, and assign environmental responsibilities to the levels of government where they can be carried out most effectively.

14. Integrate into formal education and life-long learning the knowledge, values, and skills needed for a sustainable way of life.
Provide all, especially children and youth, with educational opportunities that empower them to contribute actively to sustainable development.
Promote the contribution of the arts and humanities as well as the sciences in sustainability education.
Enhance the role of the mass media in raising awareness of ecological and social challenges.
Recognize the importance of moral and spiritual education for sustainable living.

15. Treat all living beings with respect and consideration.
Prevent cruelty to animals kept in human societies and protect them from suffering.
Protect wild animals from methods of hunting, trapping, and fishing that cause extreme, prolonged, or avoidable suffering.
Avoid or eliminate to the full extent possible the taking or destruction of non-targeted species.

16. Promote a culture of tolerance, nonviolence, and peace.
Encourage and support mutual understanding, solidarity, and cooperation among all peoples and within and among nations. Implement comprehensive strategies to prevent violent conflict and use collaborative problem solving to manage and resolve environmental conflicts and other disputes.
Demilitarize national security systems to the level of a non-provocative defense posture, and convert military resources to peaceful purposes, including ecological restoration.

Eliminate nuclear, biological, and toxic weapons and other weapons of mass destruction Ensure that the use of orbital and outer space supports environmental protection and peace.
Recognize that peace is the wholeness created by right relationships with oneself, other persons, other cultures, other life, Earth, and the larger whole of which all are a part.

The Way Forward

As never before in history, common destiny beckons us to seek a new beginning. Such renewal is the promise of these Earth Charter principles. To fulfill this promise, we must commit ourselves to adopt and promote the values and objectives of the Charter.

This requires a change of mind and heart. It requires a new sense of global interdependence and universal responsibility. We must imaginatively develop and apply the vision of a sustainable way of life locally, nationally, regionally, and globally. Our cultural diversity is a precious heritage and different cultures will find their own distinctive ways to realize the vision. We must deepen and expand the global dialogue that generated the Earth Charter, for we have much to learn from the ongoing collaborative search for truth and wisdom.

Life often involves tensions between important values. This can mean difficult choices. However, we must find ways to harmonize diversity with unity, the exercise of freedom with the common good, short-term objectives with long-term goals. Every individual, family, organization, and community has a vital role to play. The arts, sciences, religions, educational institutions, media, businesses, nongovernmental organizations, and governments are all called to offer creative leadership. The partnership of government, civil society, and business is essential for effective governance.

In order to build a sustainable global community, the nations of the world must renew their commitment to the United Nations, fulfill their obligations under existing international agreements, and support the implementation of Earth Charter principles with an international legally binding instrument on environment and development.

Let ours be a time remembered for the awakening of a new reverence for life, the firm resolve to achieve sustainability, the quickening of the struggle for justice and peace, and the joyful celebration of life.