SITUATION—OPTIONS—CONSEQUENCES (ENVIRONMENTAL WORLDVIEWS)

SITUATION: (Based on our textbook--Miller, Living in the Environment, 14th Edition)

The differing views about how serious our environmental problems are and what we should do about them arise mostly out of differing environmental worldviews. Your environmental worldview is how you think the world works, what you think your role in the world should be, and what you believe is right and wrong environmental behavior (environmental ethics).

People who have widely differing environmental worldviews can take the same data, be logically consistent, and arrive at quite different conclusions because they start with different assumptions and values.

The figure below shows some different types of worldviews. Most can be characterized as human-centered, earth-centered, or some combination thereof. As you move from the center of the figure to the outside rings, the worldviews become less human-centered and more earth-centered and devoted to sustaining the earth's natural systems (ecosystems), life-forms (biodiversity), and life-support system (the biosphere) for the benefit of humans and other forms of life.

What we value largely determines how we act. Environmental philosophers normally divide values into two types. One type, called instrumental or utilitarian, values life forms because of their usefulness to us or to the biosphere. The concept of preserving natural capital and biodiversity because they sustain life and support economies is an instrumental value based mostly on the usefulness of these natural goods and services to us.

A second type, called intrinsic or inherent, values a form of life just because it exists, regardless of whether it has any usefulness to us.

As worldviews go from being human-centered to more earth-centered (moving out from the center of the figure) instrumental values play a lesser role, and intrinsic values become more important. The view that a wild species, an ecosystem, biodiversity, or the biosphere has value only because of its usefulness to us is called an anthropocentric (human-centered) instrumental value.
In contrast, the view that these forms of life are valuable simply because they exist, independently of their use to human beings, is called a biocentric (life-centered) intrinsic value. According to the biocentric worldview, ALL species and ecosystems and the biosphere have both intrinsic and instrumental value, we are just one of many species, and we have an ethical responsibility not to impair the long-term sustainability and adaptability of the earth's natural systems for all life.

**BIOSPHERE 2: A LESSON IN HUMILITY**

In 1991, eight scientists (four men and four women) were sealed into Biosphere 2, a $200 million facility designed to be a self-sustaining life-support system (see figure below) and to increase our understanding of the earth's life-support system: Biosphere 1.

The 1.3-hectare (3.2-acre) sealed system of interconnected domes was built in the desert near Tucson, Arizona. It had a tropical rain forest, savanna, desert, lakes, streams, freshwater and saltwater wetlands, and a mini-ocean with a coral reef.

The facility was stocked with more than 4,000 species of organisms. Sunlight and external natural gas-powered generators provided energy. The Biospherians were to be isolated for 2 years and to raise their own food using intensive organic agriculture, breathe air recirculated by plants, and drink water cleansed by natural recycling processes.

From the beginning there were many unexpected problems. The life-support system began unraveling. Large amounts of oxygen (O₂) disappeared when soil organisms converted it to carbon dioxide (CO₂). Additional oxygen had to be pumped in from the outside to keep the Biospherians from suffocating.

The nitrogen and carbon recycling systems also failed to function properly. Levels of nitrous oxide (N₂O) rose high enough to threaten the occupants with brain damage and had to be controlled by outside intervention. Carbon dioxide skyrocketed to levels that threatened to poison the humans and spurred the growth of weedy vines that choked out food crops.

Plant nutrients leached from the soil and polluted the water systems. Tropical birds died after the first freeze. An Arizona ant species got into the enclosure, proliferated, and killed off most of the system's introduced insect species. After the majority of the introduced insect species became extinct, the facility was overrun with cockroaches and katydids.
All together, 19 of the Biosphere's 25 small animal species became extinct. Before the 2-year period was up, all plant-pollinating insects became extinct, thereby dooming to extinction most of the plant species.

Despite many problems, the facility's waste and wastewater were recycled, and the Biospherians were able to produce 80% of their food supply.

Scientists Joel Cohen and David Tilman, who evaluated the project, concluded, "No one yet knows how to engineer systems that provide humans with life-supporting services that natural ecosystems provide for free."

Columbia University took over Biosphere 2 as a research facility for a few years, but abandoned it in 2003.

According to http://library.thinkquest.org/04oct/01590/humans/enviroworldview.html:

An environmental worldview consists of three components: how people think the world works, what they think their role in the world should be, and what they believe is right and wrong environmental behavior. There are three major types of environmental worldviews: anthropocentric (human-centered), biocentric (life-centered), or ecocentric (earth-centered).

**Anthropocentric Worldviews**

Anthropocentric thinkers often believe that it is the role of humans to be masters of nature. To them, humans have intrinsic value; humans are valuable simply because they exist. Nature, on the other hand, has instrumental value; its worth is determined only by its usefulness to humans.

A number of different anthropocentric worldviews exist, and each one presents a different approach to dealing with the environment and its resources. The free-market school promotes a free-market global economy, unlimited competition, and minimal government interference.
The *no-problem school* claims that environmental and resource problems are negligible, and that any such problems can be solved easily through better management and technology.

The *responsible planetary management school* combines the ideas of a free-market and improved technology. However, it also recognizes that nature requires protection, and that government interference may at times be necessary in order to provide this protection.

The *spaceship-earth worldview* portrays the planet as a single, complex machine (or “spaceship”) that can be managed and controlled. It resulted from photographs of Earth taken from space in the 1960s and 1970s. Upon seeing these photographs, many people began to see the Earth as a finite entity that required protection and control.

The *stewardship school* is similar to the spaceship-earth school, as it states that humans have an ethical responsibility to be good managers of the environment.

**Biocentric Worldviews**

Unlike the anthropocentric worldview, the biocentric worldview does not distinguish between humans and other life on earth. According to biocentric thinkers, all species have intrinsic value; all forms of life have an inherent right to exist.

The nonliving environment, on the other hand, has instrumental or utilitarian value. Most people with a biocentric worldview feel that the protection of a species is more important the protection of each individual member of that species. However, others insist that humans have an obligation to protect all living creatures whenever possible.

**Ecocentric Worldviews**

The ecocentric worldview demands that the environment receive moral consideration of its own, consideration that is not associated with human interests. It recognizes the need to prevent the
premature extinction of species, but also emphasizes the importance of protecting the ecosystems in which those species live.

Like the two previous worldviews, the ecocentric philosophy contains a set of different approaches. The first is the environmental wisdom school, which recognizes that our resources are limited and that technology and economic growth may either help or harm the environment. Instead of adapting the Earth for our needs, then, we should adapt our needs to the environment in order to secure a sustainable future.

The deep ecology school resembles the environmental wisdom school in that it recognizes the intrinsic and instrumental values of species, ecosystems, and the biosphere. However, it goes a step further, claiming that humans have no right to interfere with environmental richness and diversity.

Knowledge of environmental worldviews is very important when studying any environmental issue. Worldviews determine how people manage natural resources, and water is arguably the most valuable natural resource on the planet. Understanding environmental worldviews can help us to understand why people decide to either conserve or exploit vital resources such as water.

OPTIONS: (The Major Types of Environmental Worldviews)

**Planetary Management Worldview**

Some people in today's industrial consumer societies have a planetary management worldview. According to this human-centered environmental worldview, we are the planet's most important and dominant species and we can and should manage the earth mostly for our own benefit. Other species and parts of nature are seen as having only instrumental value based on how useful they are to us. This is a form of utilitarianism.

The figure above summarizes the four major beliefs or assumptions of this environmental worldview. Here are three variations of this environmental worldview:

- The no-problem school. We can solve any environmental, population, or resource problems with more economic growth and development, better management, and better technology.
• **The free-market school.** The best way to manage the planet for human benefit is through a free-market global economy with minimal government interference and regulations. All public property resources should be converted to private property resources and the global marketplace, governed by pure free market competition, should decide essentially everything.

• **The spaceship-earth school.** The earth is like a spaceship: a complex machine that we can understand, dominate, change, and manage to prevent environmental overload and provide a good life for everyone. This view developed as a result of photographs taken from space showing the earth as a finite planet, or an island in space. This led many people to see that the earth is our only home and we had better treat it with care.

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**Stewardship Worldview**

Another anthropocentric environmental worldview is the **stewardship worldview**. According to this increasingly popular view, we have an ethical responsibility to be caring and responsible managers, or stewards, of the earth. We can and should make the world a better place for our species and others through love, care, knowledge, and technology. The figure on page 5 (center) summarizes the major beliefs of this worldview.

According to the stewardship view, as we use the earth's natural capital, we are borrowing from the earth and from future generations, and we have an ethical responsibility to pay the debt by leaving the earth in at least as good a condition as we enjoy.

In thinking about our responsibility toward future generations, some analysts believe we should consider the wisdom of the 18th century Iroquois Confederation of Native Americans: *In every deliberation we must consider the impact of our decisions on the next seven generations.* Some people believe any human-centered worldview will eventually fail because it wrongly assumes we now have or can gain enough knowledge to become effective managers or stewards of the earth.
According to these analysts, the unregulated global free-market approach will not work because it is based on increased losses or degradation of the earth's natural capital and focuses on short-term economic benefits regardless of the harmful long-term environmental and social consequences.

The image of the earth as an island or ship in space has played an important role in raising global environmental awareness. But critics argue that thinking of the earth as a spaceship that we can manage is an oversimplified and misleading way to view an incredibly complex and ever-changing planet. This view was supported by the failure of Biosphere 2.

**EARTH RISE FROM APOLLO 8**

These critics point out that we do not even know how many species live on the earth, much less what their roles are and how they interact with one another and their nonliving environment. We have only an inkling of what goes on in a handful of soil, a meadow, a pond, or any other part of the earth.

As biologist David Ehrenfeld puts it, "In no important instance have we been able to demonstrate comprehensive successful management of the world, nor do we understand it well enough to manage it even in theory." According to environmental educator David Orr: "On balance, I think, we are becoming more ignorant because we are losing cultural knowledge about how to inhabit our places on the planet sustainably, while impoverishing the genetic knowledge accumulated through millions of years of evolution."

People disagree over how far we should extend our ethical concerns for various forms or levels of life. Some critics believe that human-centered environmental worldviews should be expanded to recognize the inherent or intrinsic value of all forms of life regardless of their potential or actual use to us.
Environmental Wisdom Worldview

As we move out from the center of the figure on page 1 we see life-centered and then earth-centered worldviews. One earth-centered worldview is called the environmental wisdom worldview. Its major beliefs are summarized in the figure on page 5. In many respects, it is the opposite of the planetary management worldview.

According to this worldview, because we are not in charge of the biosphere, we should learn how it has maintained itself over billions of years and use what we learn to sustain ourselves and the biosphere into the future.

This worldview includes the belief that the earth does not need us managing it in order to go on, whereas we do need the earth in order to survive. According to this view we cannot save the earth because it does not need saving. What we need to save is the existence of our own species and other species that may become extinct because of our activities.

Sustainability expert Lester W. Milbrath asks us to try this thought experiment: "Imagine that, suddenly, all the humans disappeared, but all the buildings, roads, shopping malls, factories, automobiles, and other artifacts of modern civilization were left behind. What then? After three or four centuries, buildings would have crumbled, vehicles would have rusted and fallen apart, and plants would have recolonized fields, roads, parking lots, even buildings. Water, air, and soil would gradually clear up; some endangered species would flourish. Nature would thrive splendidly without us."

Others say we do not need to be biocentrists or ecocentrists to value life and the earth. They point out that the human-centered stewardship environmental worldview also calls for us to value individuals, species, and the earth's life-support systems as part of our responsibility as the earth's caretakers.

**Roundworms Clogging a Person's Small Intestine**

A related ecocentric environmental worldview is the deep ecology worldview, which consists of eight premises developed in 1972 by Norwegian philosopher Arne Naess, in conjunction with philosopher George Sessions and sociologist Bill Devall. First, each nonhuman form of life on the earth has inherent value, independent of its value to humans.
Second, the fundamental interdependence and diversity of life-forms contribute to the flourishing of human and nonhuman life on earth.

Third, humans have no right to reduce this interdependence and diversity except to satisfy vital needs.

Fourth, present human interference with the nonhuman world is excessive, and the situation is worsening rapidly.

Fifth, because of the damage caused by this interference, it would be better for humans, and much better for nonhumans, if there were a substantial decrease in the human population.

NYC MARATHON

Sixth, basic economic and technological policies must therefore be changed.

Seventh, the predominant ideology must change such that measurements of the quality of life focus on the overall health of the environment and all living things, rather than on the material wealth of individuals and societies.
Eighth, those who subscribe to these points have an obligation directly or indirectly to try to implement the necessary changes.

Naess also described some lifestyle guidelines compatible with the basic beliefs of deep ecology. They include appreciating all forms of life, consuming less, emphasizing satisfaction of vital needs rather than wants, working to improve the standard of living for the world's poor, working to eliminate injustice toward fellow humans or other species, and acting nonviolently.

Deep ecology is not an ecoreligion, nor is it antireligious or antihuman, as some of its critics have claimed. It is a set of beliefs that would have us think more deeply about the inherent value of all life on the earth and about our obligations toward all life.

The ecofeminism worldview:

French writer Françoise d'Eaubonne coined the term ecofeminism in 1974. It includes a spectrum of views on the relationships of women to the earth and to male dominated societies (patriarchies). Most ecofeminists agree that we need a life-centered or earth-centered environmental worldview. However, they believe a main cause of our environmental problems is not just human centeredness, but specifically male centeredness (androcentrism).

Many ecofeminists argue that the rise of male dominated societies and environmental worldviews since the advent of agriculture is primarily responsible for our violence against nature and for the oppression of women and minorities as well. To such ecofeminists, our shift from hunter-gatherer to agricultural and industrial societies changed our view of nature from that of a nurturing mother to that of a foe to be conquered.

IRONY PERSONIFIED—THINK ABOUT EMEKA OKAFOR'S NBA SALARY COMARED TO DIANA TAURASI'S WNBA SALARY

Ecofeminists note that women earn less than 10% of all wages, own less than 1% of all property, and in most societies have far fewer rights than men. These analysts also argue that to become primary players in the male power-and-domination game, most women are forced to emphasize the characteristics deemed masculine and become "honorary men."
Some ecofeminists suggest that oppression by men has driven women closer to nature and made them more compassionate and nurturing. As oppressed members of society, they argue, many women have more experience in dealing with interpersonal conflicts, bringing people together, acting as caregivers, and identifying emotionally with injustice, pain, and suffering.

Thus women with such qualities are in a better position to help lead as we struggle to develop more environmentally sustainable and just societies. Such societies would be based on cooperation, rather than confrontation and domination, and on finding win-win solutions to our environmental and human problems instead of win-lose solutions often associated with our current male-dominated societies.

Ecofeminists argue that women should be treated as equal partners with men. They do not want just a fair share of the patriarchal pie or to be given token roles or co-opted into the male power game. They want to work with men to bake an entirely new pie. They hope to heal the rift between humans and nature and end oppression based on sex, race, class, and cultural and religious beliefs.

Ecofeminists are not alone in calling for us to encourage the rise of life-centered people who emphasize the best human characteristics: gentleness, caring, compassion, nonviolence, cooperation, and love.

The frontier environmental worldview:

The early colonists in America developed a **frontier environmental worldview**. They viewed most of the continent as having vast and seemingly inexhaustible resources and as a hostile and dangerous wilderness to be conquered and managed for human use.

THE GREAT OKLAHOMA LAND RUSH (APRIL 22, 1889)

The government set up by European settlers conquered Native American tribes, took over the land, and urged the people to spread across the continent. The transfer of vast areas of public land to private interests accelerated the settling of the continent.
The frontier environmental worldview prevailed for more than 280 years, until the government declared the frontier officially closed in 1890. However, this worldview that there is always another frontier to conquer remains as an important part of American culture today.

**WHAT IS YOUR ENVIRONMENTAL WORLDVIEW?**

**CONSEQUENCES:** (Planetary Management Environmental Worldview)

The *Planetary Management Worldview* is anthropocentric (human centered) construct that values life forms and resources because of their usefulness to us or the biosphere.

According to [http://isu.indstate.edu/jspeer/conservation/electure1.htm](http://isu.indstate.edu/jspeer/conservation/electure1.htm) this worldview is delineated by the following precepts:

"*We are the planet's most important species and we are in charge of the rest of nature.*"

"*There is always more.*" (This states that the earth has essentially unlimited supply of resources. Strong dependence upon science and technology to find and exploit new resources and to clean up our waste and pollution).

"*All economic growth is good, more economic growth is better, and the potential for economic growth is essentially limitless.*"

"*Our success depends on how well we can understand, control, and manage the Earth's life-support systems for our benefit.*"

The majority of the scientific community supports the idea that our current population growth and use of resources is damaging the environment and therefore our ability to survive off of the environment. On November 18, 1992 some 1,680 of the world's senior scientists from 70 countries, including 102 of the 196 living Nobel laureates signed this urgent warning to governmental leaders of all nations.

"*The environment is suffering critical stress... Our massive tampering with the world's interdependent web of life - coupled with the environmental damage inflicted by deforestation, species loss, and climate change - could trigger widespread adverse effects, including unpredictable collapses of critical biological systems whose interactions and dynamics we only imperfectly understand. Uncertainty over the extent*
of these effects cannot excuse complacency or delay in facing the threats... No more than one or a few decades remain before the chance to avert the threats we now confront will be lost and the prospects for humanity immeasurably diminished... whether industrialized or not, we all have but one lifeboat. No nation can escape injury when global biological systems are damaged... We must recognize the Earth’s limited capacity to provide for us.”

Under this system of planetary management (perhaps non-management is a better term), it is inevitable that the US, Russia, China, India and Brazil and many other countries will continue to industrialize. They all want a better standard of living for their citizens, and they are all concerned for their national security.

If the US and other countries were to end their commitment to maximum-rate industrialization, to free trade, and to globalization, the industrial age could conceivably limp along for centuries (there is sufficient coal to last another couple of centuries), albeit not at such a high level as during the heyday of the petroleum age (before the global peak in production). And that would seal the doom of the planet’s biosphere.

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WORLD VIEW

Now that the philosophy of economics has been embraced worldwide – that economic development is good, that a high material standard of living is good, that only economic development can raise people from poverty, that the damage to the environment is an “externality” that doesn’t matter, that what happens to future generations is irrelevant (i.e., has a “discounted present value” of almost zero) – the industrial age has a death-grip on the planet.

This grip is incredibly strong because not only do the wealthy (individuals, corporations, nations, international organizations) wish to continue the system, but the ordinary citizens of the world (almost) all have been convinced that the only way to a life free of poverty is through more industrialization – even though it is industrialization that has created the billions of desperately poor people presently on the planet (http://www.foundation.bw/)

On the other hand, affluence breeds environmental consciousness and action. In America the air is cleaner, drinking water is purer, most rivers and lakes are cleaner and the food supply is more abundant and safer than they were in 1970 when many of our premier environmental laws were passed. Affluence definitely finances improvements in environmental quality.

Optimists always point to our managerial, organizational, and business prowess and they say that we can easily trade our brown economy for an expanding green one that is sustainable and environmentally sound.

**AQUACULTURE**

![Aquaculture Image]

**CONSEQUENCES:** (Stewardship Environmental Worldview)

According to Miller the stewardship worldview encompasses the following:

- we are the planet's most important species but we have an ethical responsibility to care for the rest of nature
- we will probably not run out of resources but they should not be wasted
- we should encourage environmentally beneficial forms of economic growth and discourage environmentally harmful forms of economic growth
- our success depends on how well we can understand, control, and manage and care for the earth's life-support systems for our benefit and for the rest of nature

Much of the debate surrounding these tenets comes from the fact that we do not have the ability or knowledge to take care of nature (e.g., Biosphere 2). Moreover, the Earth is limited in terms of its resources and the prudent (careful management) vs. prodigal (reckless waste) argument is moot in a finite world. In essence, *complete primary recycling* is the ONLY way to go.

Importantly, this control, care, and management scheme is still an anthropocentric in nature and does not seem to take into account the laws of thermodynamics and the natural biogeochemical cycles (e.g., the carbon cycle).
CONSEQUENCES: (Environmental Wisdom Worldview)

According to Miller the environmental wisdom worldview encompasses the following:

- nature exists for all the earth's species, not just for us, and we are not in charge of the rest of nature
- resources are limited, should not be wasted, and are not all for us
- we should encourage earth-sustaining forms of economic growth and discourage earth degrading forms of economic growth
- our success depends on learning to cooperate with one another and with the rest of nature instead of trying to dominate and manage earth's life-support systems primarily for our own use

These precepts are congruent with many of the Native American worldviews and are antithetical to planetary management worldview. To switch to this paradigm would take a drastic change in the western psyche.


"Generalizations about Native American philosophy/spirituality are also on firm footing when discussing the earth. Native peoples almost universally view the earth as a feminine figure . . . . The relationship of Native peoples to the earth, their Mother, is a sacred bond with the creation . . . . Native peoples viewed many of the products of the natural environment as gifts from the "Creator" . . . . Man, in the Native American conception of the world, was not created to "lord" over other beings, but rather to cooperate and share the bounty of the earth with the other elements of the creation. . . . (1993, 22-23)."

Would 6.6 billion people be better off with this approach? When Columbus arrived in 1492 the estimated population of North America (north of Mexico) was 2 to 18 million people. Today this number has risen to 333,000,000 (Canada and the United States combined).

With only 2 to 16 million people the Pre-Columbian North American culture easily avoided the Tragedy of the Commons and vigorously subscribed to the environmental wisdom worldview. Could it be that the planetary management worldview is in effect because of overpopulation?