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Nature and Humanity: Bridging the Divide

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Mutualism: the doctrine or practice of **mutual dependence** as the condition of individual, social [and ecological] welfare.
Merriam-Webster Dictionary[1]

I. Introduction

The environment—encompassing terrestrial, aquatic, and atmospheric conditions—is something all living things share. Therefore, it has the power to unify peoples and the broader humanity with their non-human surroundings, both locally and globally. Yet the environment also has divisive power. Resource wars, water shortages, and pesticide-resistant insects in agriculture are just a few problems facing humanity that have arisen due to a divide between nature and humanity. Today, the world faces the greatest climate change since the beginning of the Holocene—largely due to our disconnected relationship with nature. How did this alienation come about? What tools can the United States use to synthesize the divide between nature and humanity?

In this essay, I will explore human ecology[2] as the necessary understanding of the inescapable relationship between nature and humanity to suggest that we, as contemporary Americans in the United States, should redefine our societal connection with nature as an integral part of environmental solutions. Without awareness of human ecology, it is impossible to establish consciousness for the immediate and long-term impacts of our decisions for both human and non-human life. The environmental problems we face today are the result of centuries of economic and political systems that have driven a deeper and deeper wedge in the divide. It is important to explore the disappearance of human ecology so we can recognize, and improve upon, the societal patterns throughout U.S. history that have led us to our current imbal-

ance with nature. Furthermore, we must examine existing societal mechanisms that have the potential to re-establish human ecology and achieve a mutualism with our local and global surroundings.

To examine these questions in more depth, I will focus on the domestic front in order to explore the role Christian religious institutions and scientific communities in the U.S. play in the relationship between nature and humanity. I chose to examine aspects of the Christian religion specifically because it dominates U.S. politics and culture compared to Jewish, Muslim, or other traditions.

First, this essay briefly explores four periods in U.S. history and evaluates the influence each era had on human ecology through the lens of Christian theology and the development of scientific processes. Then I demonstrate that both aspects of this seeming dichotomy offer important resources to mend this divide. Finally, I broaden the scope to suggest that global citizenship responsibilities include environmental citizenship, and I propose realistic ideas of what human ecology could look like today.

II. The Division

> Let [men] have dominion over the fish of the sea, over the birds of the air, and over the cattle, over all the earth and over every creeping thing that creeps on the earth. NKJV Genesis 1:26

I will not claim that humans need to stop altering the environment. To demand that would be preposterous. Contrary to popularly held beliefs, even Native Americans impacted their surroundings. It has been suggested that the limits in population size and technological advancements give the false impression of the "noble savage" living harmoniously with the land.[3] As Lynn White, a renowned environmental historian, wisely states, "[a]ll forms of life alter their environment."[4] It is impossible for any creature to eat, sleep, or exist at all, without leaving some evidence of its presence.

However, altering our environment is different from rendering it uninhabitable to other species and, ultimately, to our own. Societal growth in and of itself is not evil, but thoughtless development inevitably has unintended consequences. The case of Easter Island is a good example. Historians deduce that this great civilization collapsed sometime in the 17th century because of forest depletion. That is to say, lack of foresight in natural resource management led to its demise.[5] In this

increasingly globalized world, the earth is a metaphorical island and, learning from past civilizations, we cannot externalize our impacts. Taller smokestacks may appear to solve pollution problems locally, but the global commons is summarily affected.

United States history has been shaped by distinct periods of Western growth, many of which initially began in Europe and quickly spread to America's expanding frontiers. The following section includes several European examples but will assess lasting impacts on the U.S. I will explore four of these eras specifically—the agricultural, scientific, industrial, and technological revolutions—in relation to how each revealed the increasing separation of humanity from nature. These periods are characterized by exponential population growth mirroring the decline of human ecology and environmental awareness.

A. Agricultural Revolution

The methods of obtaining sustenance directly reflect humanity's relationship with nature. Arguably, humanity's departure from mutualism with nature began in the Fertile Crescent, when humans first tilled the land for cultivation. Initially, agriculture did not have a notable impact on the environment, but in the 16th century, European agricultural production skyrocketed. Dave Foreman, founder of Earth First!, describes the initial significant signs of separation from nature:

> Before agriculture…we had no concept of wilderness and we were a part of it. But with irrigation ditches, crop surpluses, and permanent villages, we became apart from the natural world…Between the wilderness that created us and the civilization created by us grew an ever-widening rift.[6]

Land ownership indicated a shift in society's relationship with the land: it became something with economic value to the individual. Selective breeding of livestock allowed pioneers to domesticate, for *their* needs and purposes, the biggest, strongest, and dumbest animals. Enclosures eventually became necessary, as farming machines, such as Jethro Tull's infamous seed drill, required large plots of land to be economical. Big machinery, "dumbed-down" animals, and private property changed U.S. landscapes, symbolizing humanity's conquest of nature and fall from human ecology.

The U.S. equivalent of the European agricultural revolution was pioneering in the great frontier during the early 19th century. In the early history of the United States, rapid economic growth took a high priority in societal development. To a large extent, this progress was made possible by new developments in farming equipment, allowing farmers to harvest greater quantities at faster paces, facilitating the de-localization of food sources, which was previously characteristic of subsistence agriculture. L.T. White succinctly describes this new form of agriculture and its impact on the relationship between man and nature:

> Thus, distribution of land was based no longer on the needs of a family but, rather, on the capacity of a power machine to till the earth. Man's relation to the soil was profoundly changed. Formerly man had been part of nature; now he was the exploiter of nature.[7]

Agricultural pioneers were seemingly enchanted by growth and lacked the foresight that could have deterred a great number of problems we now face. Intensified harvests damaged the land and strained the soil, depleting them of nutrients and stripping them of perennial root systems useful for erosion prevention. Donald Worster, author of *The Dust Bowl*, blames these factors for the dust bowl in the 20th-century Midwest. He believes "the dust bowl…must be explained as a failure in ecological adaptation—as an absence of environmental realism."[8]

We still have not learned from that catastrophe. Even in the late 20th century, people in the U.S. maintained the new frontier mentality regarding farming. Earl Butts, Secretary of Agriculture in the 1970s, encouraged the practice of farming "fence-post to fence-post" in order to utilize as much land as possible.

What new kind of environmental disasters will we experience if we do not quickly adopt a new environmental realism? Today we face "super-pests"—moths and beetles immune to even the most toxic pesticides available to the agricultural industry. We must reinvent agricultural practices to work harmoniously with ecological principles or else we will find ourselves losing an evolutionary "arms race."

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B. The Enlightenment

The Enlightenment in the 16th and 17th centuries was important in shaping philosophical ideas and culture surrounding issues of human ecology. This period marked the end of demons, angels, and witchcraft, and the beginning of atoms, chemical reactions, and planetary motion. Nature, which was once perceived as a force beyond human comprehension or control, was stripped of its mystery. The perception of an emotional and intelligent natural "consciousness" disappeared under the skepticism and all-knowing character of a new scientific paradigm. During the Enlightenment period, many intellectuals and scientists were responsible for driving a wedge in humanity's relationship with the non-human world. Two particular individuals, Francis Bacon and Renée Descartes, were crucial in developing scientific methods still commonly practiced today. Others, such as Jean-Jacques Rousseau, viewed the development of science as the downfall of inherent human goodness.

Francis Bacon (1561–1626), widely considered a father of modern science, viewed scientific processes as the gateway for exploitation of nature's "womb" of secrets for the good of humankind. Bacon uses rhetorically strong phrases in his writings to encourage the "rape" of nature's resources for the good of man. Examples include praising a scientist's ability to "penetrate the mind" and employ the "thrust of his argument."[9] Just as some Christian communities cite the book of Genesis as evidence of our privilege to exploit nature, this greatly admired figure promoted dominion over the surroundings through the scientific process. The language and subsequent culture that developed on the shoulders of Bacon continually reinforce the widely accepted notion of exploitation of nature for the benefit of humanity.

Renée Descartes (1596–1650), a contemporary of Bacon, was famous for his idea of dualism, the separation of the mind and body. What he is less well known for is his practice of vivisection—the dissection of living animals. He believed that only humans had minds, and incorrectly concluded that therefore only humans can feel pain. The practice of vivisection became widespread in Europe. Not only had non-human life lost its mystery, but it also underwent torture in the interests of science.

In contrast, Jean-Jacques Rousseau (1712–1778) recognized a growing divide between contemporary humanity and the humanity that existed in a state of nature before the development of society or civi-

lization. Rousseau believed that humanity in an animal state was self-sufficient; vanity and fear arose when people began measuring themselves against one another, forming a political society. Although I do not suggest we return to animalistic behaviors, our current political and social dynamics perpetuate our social interrelatedness to the exclusion of the natural world.

Scientists of the Enlightenment are partially responsible for the disregard of human ecology, but the foundational methods used to develop science are very much tied to Christian dogma, particularly that of the Catholic Church. Scientists from this period until the late 18th century often cited Catholic Christian theology as the motivation behind their scientific exploration. Even Galileo, whom Pope Urban VIII ordered imprisoned for his heliocentric theories, sought to explain scripture with his observations. In a hypothesis about the creation of the sun, he proposes, "after the marvelous construction of the vast celestial sphere, the divine Creator pushed the refuse that remained into the center of that very sphere and hid it there."[10] Galileo and other scientists of the Enlightenment gained (and granted) moral authority to destroy human ecology through their scientific paradigms, which still influence modern science.

Though less extensive than in Europe, the U.S. Enlightenment inspired changes in science, religion, and politics in the colonies beginning in the 1690s. At this time, scientific change consisted primarily of documenting new plant and animal species in the new territories. Other Enlightenment participants, such as Benjamin Franklin (1706–1790), sought societal applications of scientific achievements. Franklin persuaded early Americans that electricity would greatly improve colonial life, thus sparking the need for a vast new source of energy. Religious endorsement of scientific progress was not limited to Europe. John Wise, a Puritan clergyman in the new colonies, declared, "to follow God and obey Reason is the same thing,"[11] reflecting an attitude that contributed to the debasement of the mystery residing in nature.

Though scientific "enlightenment" signaled great progress in understanding the natural environment, people in the U.S. failed to internalize their inseparable tie to ecology. As White puts it, "Despite Copernicus, all the cosmos rotates around our little globe. Despite Darwin, we are not, in our hearts, part of the natural process."[12] Not only did the Enlightenment create a demand for modern conveniences like electricity, but religious leaders also gave such progress moral authority, opening the pathway to an era of extraction and production.

C. Industrial Age

The Agricultural Revolution and the Enlightenment laid the framework for a new paradigm that disregarded human ecology. Society no longer saw the need for mutualism with nature. Before the Industrial Age, society functioned mainly on renewable energy sources such as manual labor, domestic animals, wind, and water. James Watt's version of the steam engine (1765) brought about rapid progress and efficient economic growth. Older technologies were still used but they were made bigger and better to accommodate large growth. For example, higher, more powerful dams were constructed for the booming textile industry. Larger-scale industry meant larger ecological impact. Beginning in the late 18th century in Europe, the Industrial era built upon the social and economic boom of agricultural transformations and new intellectual paradigms of the Enlightenment. Food surplus allowed a population boom and subsequent labor surplus. As people flocked to urban areas in search of work, a new age of steam and steel began.

At the turn of the 20th century, the Industrial Revolution in the United States, sometimes dubbed the Second Industrial Revolution, reflects the beginning of the mass marketing of consumer goods and the widespread use of electricity. Henry Ford's mass production of the internal combustion engine via assembly line signaled a new age of modernity and consumption. Thomas Edison's invention of a long-lasting light bulb spurred the wide availability of electricity.

John Moore, author of a comprehensive document on human ecology, described the Industrial Age as a "revolution" due to the immensity of growth. In the following passage he describes this seemingly uninhibited growth and the implications for humanity's relationship with the natural world:

> The Industrial Revolution organized society into an efficient system for exploiting the natural world and producing an abundance of products and services that continues to this day. Unbridled human power was unleashed upon the environment. Today no product or technological process seems impossible…Feats once reserved for the gods are within our powers.[13]

The birth of the steam engine and coal plants opened the doorway for the redistribution of natural resources to feed growing urban populations. Minerals and other fruits of the earth were reduced to mere

numbers on the stock and trade markets.[13] Western humanity was no longer limited by nature; humans had triumphed over the land with efficient machines, labor surplus, and market capitalism.

D. Technology Boom

Today a new generation of a post-industrial workforce has risen to the challenge of expedited technological growth. Modern technology allows unprecedented human growth, yielding faith in the "techno-fix," the belief that technology will solve all our problems. Technology in the name of environmentalism has led to investment in carbon pollution remediation efforts such as carbon sequestration, solar panels, and synthetic gas plants. Certainly these technologies will help but we cannot depend on them to rebuild an economic and cultural harmony with nature.

Neither human progress nor technology as a whole inherently hastens fragmentation with nature. Some technologies facilitate mass extraction of the earth's resources and ever-increasing emissions while others allow progress to be more efficient and less harmful. Efficient combustion engines and cheap solar panels could theoretically help ameliorate the impact of global climate change, but technology alone will not save us. We will eventually corner ourselves as we explore new ways to exercise our domination and we will discover new problems along the way.

Overconfidence in the techno-fix will only reinforce current behavior toward the environment. If, as I suggest, environmental degradation can be traced to a fundamental disregard of human ecology, which can only be resolved through a paradigm shift, then technology will never be enough to bridge the growing chasm between humanity and the non-human world.

A look at U.S. history reveals the patterns of societal changes, that drove a wedge between people and their surroundings. The division between nature and humanity grew out of scientific developments and applications but also through moral acceptance, encouraged by Christian sects, such as the Puritans and the Catholic Church. Even so, these social and political instruments can be used to mend the partition that still exists. The juxtaposition of science and Christian religion has the power to divide but also to unite.

III. Our Future

As we come to realize that we cannot treat the earth as we have over the past few centuries, we will need to learn how to realign our identities to accommodate the mutual relationship that nature demands. While nobody can prove conclusively that Hurricane Katrina, drought in the Southeast, and fires in the West are directly linked to global climate change, the International Panel on Climate Change (IPCC) declares that we will see warmer temperatures and an increased intensity of natural disasters in the near future if current levels of carbon emissions continue.[14]

The actions we take toward our environment reflect "larger intellectual patterns. What people do about their ecology depends on what they think about themselves in relation to things around them."[15] In many ways, we base our decisions on the perception of our destinies, both on this earth and after death. If religious groups interpreted God's command in Genesis 1:26 as "stewardship" rather than "exploitation," protection of the land could become a moral obligation. Those who adhere to secular scientific paradigms would embrace the fact that nothing, including humanity, "is free from the experience of gravity, earth, sky, air, sunlight, or the peculiar quirks of the unfolding of life in a natural world."[16] Any action taken, whether detrimental or seemingly harmless, must reflect awareness for human ecology through a paradigm shift in how we see ourselves reflected in the environment.

Two concrete strategies proposed by Richard T. Wright can be utilized to reconnect human behavior to environmental impacts. The first, termed "theological strategy," sanctifies nature through religious institutions, which instill morality and ethics throughout congregations. The second strategy, "ecological strategy," uses the argument that humans are part of nature and therefore dependent on it for survival. This strategy utilizes education and media to integrate human ecology into our society.[17] The next two sections of the essay will assess the effectiveness and potential of each of these approaches.

A. Return to the Garden of Eden

Although the U.S. government was founded on the principle of religious freedom, the society was formed under the primary influence of Christian theology and Christian religious institutions, which still dominate political discourse today. In recent political history, the con-

servative Christian Right has established far more political power than have environmental interest groups. Ted Nordhaus and Michael Schellenberger compare the two movements in their recently released book, *Break Through.* Evangelical and environmental leaders "both tell stories about humankind's fall, one from Eden and the other from Nature. Both tell revenge fantasies about a future apocalypse that serves as punishment for humankind's sins against either God or Nature. And both reward true believers with the warm glow of feeling morally superior to non-believers."[18] If so, where do the environmentalists miss the point? A partial answer is that some stereotypical environmentalists preach about sacrifice and limits on consumption and lifestyle, while evangelicals frequently offer possibilities and opportunities. Additionally, most churches expect members to uphold a monthly pledge to further the mission of the church. Originally obligated in the book of Genesis, some churches encourage tithing, the practice of giving 10% of gross income to the discretion of the church. Having hundreds or thousands of people together in one place, once a week, has much more potential in terms of money collection than Sierra Club door knocking. The skills and resources of Christian institutions are essential in mobilizing any widespread societal change.

Fortunately, the environment is becoming a non-partisan, non-special-interest issue as people realize there is no escape from the impact of climate change on their lives. Many books and campaigns have caught the interest of fundamental Christians across the U.S. Even Newt Gingrich, a powerful Republican leader widely supported by the conservative Christian community and long-time enemy of environmental interests, has recently co-authored a book asking his supporters to embrace the fact that a healthy environment means a healthy democracy and economy.[19] Others appeal to emotionally motivated audiences. One such author, Eban Goodstein, in his book *Fighting for Love in a Century of Extinction*, argues that humans are innately awe-inspired by nature; we seek out connection through nature's beauty. Goodstein believes passion and morality, through a spiritual connection with nature, will stop global warming and facilitate environmental respect.[20]

Our extensive National Park system is an example of how many people seek spiritual connection in nature. John Muir, a key player in the preservation movement of the late 19th century, once said:

> Why should man value himself as more than a small part of the one great unit of creation? And what creature of all that the Lord has taken the pains to make is not essential to the completeness of that unit—the cosmos? The universe would be incomplete without man; but it would also be incomplete without the smallest transmicroscopic creature that dwells beyond our conceitful eyes and knowledge.[21]

Muir came to have great influence on the politics of that time because he framed his conservation campaign in terms of Christian morality. If destruction of nature means the destruction of God's gifts to us, then it becomes a mortal sin to cut down trees. Muir once even referred to sheep, grazing over the pristine lands of Yosemite, as "locust[s] with hooves," a reference to God's punishing plague in Exodus. For him, even grazers were disruptions to the natural landscape. Today, however, many environmentalists would be thrilled to return suburban sprawl to pasture lands. Yet others find Muir to be somewhat of a misanthrope for his purist views of nature and consideration of Native Americans as "unclean animals."[22] How can the same morality, combined with consideration for human ecological needs, be used today to mobilize action and mitigate climate change?

Tarakeshwar and collaborators conducted a quantitative analysis and found among a sample of Presbyterians that theologically conservative views negatively correlated with pro-environmental beliefs, behaviors and willingness to invest in the environment.[23] They propose two reasons Christians are unlikely to financially or behaviorally support environmental regulation. First, Christian theology puts a heavy emphasis on the afterlife. Those who believe in heaven are concerned with life decisions that will ensure admittance to heaven upon death. These motivations can distract from "earthly" concerns, such as environmental quality. Second, religious conservatives hold stereotypes of environmentalism as "liberal, modernistic, and secular."[24] Even if the environment is a non-partisan issue, such perceptions can restrict support from religious conservatives who do not embrace other characteristics traditionally associated with "environmentalists." Tarakeshwar also found that a belief in nature as sacred, and thus respect for it as a gift from God, was associated with stronger pro-environmental beliefs and a greater willingness to invest in protecting the environment. These findings "suggest that religious institutions have the potential to support or discourage care for the environment."[25]

Dozens of evangelical leaders and their parishes have participated in the Evangelical Climate Initiative, promoting programming around the country in education and action to stop global climate change. Instead of citing the IPCC or economic security as reasons to take action, the Initiative states the following:

> The same love for God and neighbor that compels us to preach salvation through Jesus Christ, protect the unborn, preserve the family and the sanctity of marriage, and take the whole Gospel to a hurting world, also compels us to recognize that human-induced climate change is a serious Christian issue requiring action now.[26]

In placing climate change at the same magnitude of importance as protecting unborn children, these Christians believe climate change is neither a partisan nor a secular issue. Imagine if there were as many billboards advocating action against climate change as there are in the widespread Pro-Life America campaign. The political sway and monetary capacity the evangelical churches have in our nation has huge potential to induce both cultural and political shifts.

Today we are sitting on the brink of mass extinction, unpredictable climate patterns, and alarming resource shortages. Perhaps our Founding Fathers did not realize to what extent humanity has the power to change the environment. But scientists, theologians, and citizens are beginning to recognize that we must rediscover gratitude for—and loyalty to—nature, and reconnection with our surroundings. Failure to achieve this societal paradigm shift will yield fewer and fewer triumphs for humanity and we will find the very survival of our own species in jeopardy.

B. Environmental Communication

Including Christian religious institutions in the quest for human ecology is essential, but a large percentage of people in the United States uphold a more secular value system, which celebrates scientific discovery and economic growth. Nevertheless, those who identify themselves as agnostic or atheist have been known to express awe, similar to religious sentiments, when experiencing "wilderness." This humility is necessary to establish an awareness of the interrelatedness of ecology and humanity in every place and time, not just in the wilderness. Here, I will introduce the concept of ecological literacy as a condition

we must establish before overcoming our separation from nature. The concept of ecological literacy, as developed by David Orr,

> …implies a broad understanding of how people and societies relate to each other and to natural systems, and how they might do so sustainably. It presumes both an awareness of the interrelatedness of life and knowledge of how the world works as a physical system…It is to know that our health, well-being and ultimately our survival depend on working with, not against, natural forces.[27]

The U.S. has many societal barriers to overcoming ecological illiteracy. Problems in overcoming a lack of ecological knowledge include threats to our current trade policies, government subsidies, and lifestyle choices because "real ecological literacy…forces us to reckon with the roots of our ailments, not just with their symptoms."[28] It is also challenging to ground our decisions in a more holistic approach given the increasingly urbanized world, in which decision makers are far removed from traditional notions of nature. One solution to this disconnect is to discard our current perception of urban areas as being apart from nature. Extensive litter, frequent sewage overflow, and fertilizer pollution in waterways indicate a general disregard of urban ecology as anything worth noticing. Society approves the degradation of urban areas because of the perception that "preserving wilderness" does not apply to a city. This does not mean that genuine wilderness is actually untouched by humanity or that we are exempt from human ecology in a city. We must see urban space and wilderness, society and ecology, as inseparable and holistically interconnected. We can solve the urban-wilderness divide if we shift our paradigms and embrace the notion that "the tree in the garden is in reality no less other, no less worthy of our wonder and respect, than the tree in an ancient forest."[29] Ecological strategy, as cited earlier, can be applied to these problems so we can develop concrete changes through education and media.

One aspect of ecological strategy is the use of media as a tool for the mass communication of ecological information and attitudes. Mass media is a powerful mode of persuasion, but it is not immune to the influence of already established power structures. When powerful claims are made, such as Rachel Carson's case against DDT, Corbett reminds us that the "media are dependent on the power structure for news and look to it for cues to the importance and veracity of claims, both scientific and political."[30] Media funding depends primarily on

the advertising industry. Thus, to some extent, advertisers control what is said in newspapers and on television based on what they want consumers to hear.

In some cases, however, environmental agitators are taken seriously. A case study on the toxicity of dioxin, a chemical used in Agent Orange that is associated with garbage incineration,[31] reveals a media scare, which successfully pressured the EPA to tighten regulation of the chemical, while its actual toxicity and carcinogenicity was fervently debated.[32] Although sometimes overly dramatic, the communication of scientific studies on the impact of our behaviors and the scope of the interrelatedness of ecology and humanity requires mass media to broaden its communication to the public. Societal change is greatly enhanced by media coverage (and consequently advertising companies) to perpetuate the ideas of ecological literacy to the public.

Additionally, communication of scientific information is subject to political and social perceptions outside of the advertising industry. Wynne proposes that, "[p]ublic uptake of science depends primarily upon the trust and credibility public groups are prepared to invest in scientific institutions and representatives."[33] In using media as a tool to promote ecological literacy, we must recognize the cultural and political relationships that play into public response to scientific information. Wynne also suggests, "public uptake of science might be improved if scientific institutions expressed an equivalent reflexive discourse in the public domain."[34] In other words, scientific institutions would not hold arrogant presumptions about the superiority of science over other domains, and instead incorporate public concerns into their objectives.

Education also plays an essential role in ecological literacy in the U.S. Orr blames our elementary school curriculum for "failing to include ecological perspectives in any number of subjects…[S]tudents are taught that ecology is unimportant for history, politics, economics, society and so forth. And through television they learn that the earth is theirs for the taking."[35] Most U.S. schools consider ecology as "extracurricular," and conduct education indoors, alienated from nature. Even schools that do offer ecology often fail to encourage students to "live out" their knowledge.

If the public becomes ecologically literate, through media and educational tools, we can envision a new paradigm from which behaviors and political decisions are made. By understanding the impact of our actions on a holistic level, and visualizing the interrelatedness of our

habitats, we can overcome the harmful, ever-growing rift, and adopt a humbler relationship with the natural world. The question is then raised: what does a synthesis between nature and humanity look like?

IV. Environmental Citizenship = Global Citizenship

Besides the obligations we have to a global society due to the increasing exchange of goods, labor, and ideas, "we have to act as if…we have global citizenship responsibilities for the simple reason that environmental problems are not locally containable."[36] The IPCC concludes that even if all carbon emissions were halted now, the effects of carbon pollution would remain decades into the future.[37] The U.S. emits over six billion metric tons of carbon dioxide every year—accounting for more than 22% of total global emissions.[38] Although the U.S. is not the only country negatively impacting the environment, we can be an example of how to achieve sustainable mutuality with our surroundings. Simultaneously, we can adopt successful strategies used in other countries. As we struggle to find our relational harmony with nature we must keep in mind that our local impact has global implications. One concept that could reshape our identities and make us "environmental citizens" is to transform our "perceptions and actions in a local context [into] an awareness of that locality's connections with and nesting within a wider, ultimately global context."[39]

In concordance with Raymond Grizzle, I propose that we develop an "environmentalism that directly includes physicians, house builders, real estate developers, and bankers not just an environmentalism that people do part time."[40] This environmentalism would begin with an awareness of, and concern for, the impact our choices have on other humans and non-humans. This can be achieved in part through the theological and ecological strategies suggested above. Then we must take action, in both the public and private sectors, to rethink policies, economic tools, and cultural norms. We should primarily focus on changing the food, transportation, and energy sectors. Localizing food sources will ground us in the very soil that gives us sustenance in addition to encouraging pollution control so as not to contaminate our nutrients. Public transportation should be expanded in dense population areas and alternative liquid fuel, coinciding with high efficiency vehicles, should be available at lower costs than gasoline. Energy used for electricity and heat must be economically and environmentally efficient, clean, renewable, and controlled by small communities. This

would simultaneously create new jobs and a demand for innovation in addition to building community self-sufficiency and empowerment. These suggestions are merely the beginning of changes that will redefine humanity's relationship to the natural world and establish a model for other developing nations.

V. Conclusion

In exploring the division of nature and humanity through various periods in U.S. history, we can see how patterns of societal development affect human ecology. Today, agriculture, philosophy, industry, and technology remain important facets for building paradigms of a new relationship between nature and humanity. Particularly through examining Christian theology and scientific understanding, we can see the potential to harness the effectiveness of many tools that already exist. Since we live in a religiously diverse nation, further study should look at Judaism, Islam, and other moral traditions. Ecological and theological strategies are both essential to bridge much of our political and social spectrum, and simultaneously bring awareness of our ecology.

Throughout U.S. history, political power, economic influence, and cultural norms have regarded humans as masters over the earth, privileged to exploit, and allowed to disregard the impact of externalities. Yet now we face potentially the most catastrophic environmental crisis since the beginning of human history. We must utilize the economic, cultural, and political influence that science and Christian religions, in collaboration with one another, have in this challenge to change our identities relative to the non-human world. If we define our relationship with the natural world as mutually dependent, then we will begin to "synthesize the divide" between humanity and nature.

Global citizenship obligates us to be accountable for our impact on our local and global environments. Global climate change is affecting human and non-human life in every ecosystem on this planet and is a direct result of the disconnection between nature and humanity. What we do to change our relationship with nature reflects our commitment to the global community. We are inescapably tied to our environment and we have the choice to continue ignoring human ecology or to embrace it and discover the unifying power of mutualism with nature.

Notes

1. Merriam-Webster Online Dictionary. http://www.m-w.com/dictionary/mutualism. Accessed online in January 2008.

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3. Ter Ellingson, *The Myth of the Noble Savage* (Berkeley: University of California Press, 2001).

4. Lynn Townsend White, Jr., "The Historical Roots of Our Ecological Crisis," *Science* 155, no. 3767 (10 March 1967), pp. 1203–1207.

5. Jared Diamond, *Collapse: How Societies Choose to Fail or Succeed* (2005).

6. Dave Foreman, *Confessions of an Eco-Warrior* (New York: Harmony Books, 1991), p. 69.

7. Lynn Townsend White, Jr. 1967.

8. Donald Worster, *Dust Bowl* (Oxford: Oxford University Press: 1979), p. 13.

9. Carolyn Merchant, "Dominion over Nature," *The Death of Nature* (Harper and Row Publishers, 1980).

10. *Opere* Vol. 1, p. 344.3–18; trans Drabkin in *Galileo on Motion and Mechanics*, p. 116.

11. Edmund Sears Morgan, *Puritan Political Ideas, 1558–1794* (Indianapolis: Bobbs-Merrill, 1965), p. 255.

12. Lynn Townsend White, Jr. 1967.

13. John A. Moore, "Science as a Way of Knowing: Human Ecology," *American Zoologist* 25, no. 2 (1985): 483–637.

14. "Summary for Policy Makers," *Climate Change 2007: The Physical Science Basis.* Intergovernmental Panel on Climate Change, 2007.

15. Lynn Townsend White, Jr. 1967.

16. Paul Shepard, "Whatever Happened to Human Ecology?," *BioScience* 17, no. 12 (December 1967): 891–894, 911.

17. Richard T. Wright, "Responsibility for the Ecological Crisis," *BioScience* 20, no. 15 (1 August 1970): 851–853.

18. Ted Nordhaus and Michael Shellenberger, *Break Through* (Houghton Mifflin Company, 2007), p. 181.

19. Newt Gingrich and Terry Maple, *A Contract with the Earth* (Baltimore: The Johns Hopkins University Press, 2007).

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