

INTRODUCTION

One critical problem in modern environmentalism stems from an ideological divide in principle. On the one hand, environmentalists who support an ecological, nonanthropocentric (non-human centered) approach to the natural world decry humans' impact on what they deem pristine, intrinsically valuable nature. On the other, strong anthropocentric (human centered) thinkers regard nature as a mere means to human ends and are concerned about the effect environmental destruction will have on human beings. But this divide raises a number of important questions: what is nature? Where is nature? Do we comprise a part of nature or are we in some sense separate from it? Does it exist for our use, does it (or some parts of it) have inherent worth; does it exist for any reason at all? These questions plague environmentalism by pitting its adherents against one another, and in some cases resulting in the pursuit of conflicting policies. However, when examining the core tenets of both philosophies it becomes apparent that this divide is unnecessary – in policy terms, at least. I intend to demonstrate how enlightened versions of both nonanthropocentric and anthropocentric philosophies would pursue the same environmental initiatives.

This project will examine differing philosophical and terminological interpretations of nature and environment, terms I will use interchangeably, to discern the roots of this schism and to argue for a convergence in practice despite a divergence in principle. Environmentalism and environmental ethics constitute complex and often esoteric philosophies; it seems unlikely that one side is totally right and the other totally wrong. There has to be some give and take for advances in environmental policy and action, a necessity that has become more apparent in the past four decades. Regardless of a person's stance on environmentalism, whether they argue for the health of ecosystems in their own right or for the best interests of future human beings, one

thing has become quite clear: the importance of maintaining the long-term ecological health of Earth's biotic and abiotic systems is crucial for the success of both. Given this mutual interest, the goals of both groups ultimately coincide. It is time to lay ideological differences aside and determine a new course for environmental action that incorporates the strengths of both perspectives, thus benefiting human and nonhuman aspects of nature.

My dissertation lays a framework for this environmental amalgamation. I have the following objectives: (a) to demystify the obscure concepts of “nature” and “wilderness”, (b) to argue that humans are a part of nature, while acknowledging their uniqueness among their fellow animal species, (c) to explore the major philosophical divisions separating ecocentrists (nonanthropocentrists and deep ecologists) from anthropocentrists, (d) to promote a new, moderate approach to environmentalism, (e) to illustrate the importance of maintaining the ecological health of natural systems in implementing this new approach, and (f) to investigate how this moderate approach could help resolve environmental disputes in the highly contested fields of biodiversity conservation and genetically modified crops. I begin this task by investigating environmental terminology – how environmentalists define basic terms such as ‘nature’ and what the consequences of such definitions might be. Are certain interpretations of these fundamental terms better than others? Do the differences in terminology really affect environmental and agricultural procedures? The answer to these questions is, unequivocally, yes.

SECTION I: WHAT IS NATURE?

In this section I will examine distinct definitions of nature, because, as Phil Macnaghten and John Urry rightly state, “There is no singular nature, only a diversity of contested natures” (Macnaghten and Urry 1998). Though this exploration is crucial to understand the factors

dividing environmentalists, I want to clarify how I will define nature (the environment) throughout this thesis. I agree with Peter Coates, who defines nature as “all that exists” or the “collective phenomena of the world” (Coates 1998: 3). In this definition, “nature” encompasses everything on earth, from plants and animals to human beings, a distinct type of animal. This perspective on the meaning of nature, however, is not universally accepted; many environmentalists define ‘nature’ as the natural world separate from anything related to humans or human society. While I agree there are circumstances that merit a distinction between what is natural and what is artificial, I believe this qualification is rarely helpful when defining humanity’s place in the natural world.

Bill McKibben, an ardent defender of a human/nature dichotomy separating mankind from the natural world, wrote a book entitled *The End of Nature*, in which he claims mankind has ended nature or, in his words:

We have ended the thing that has, at least in modern times, defined nature for us – its separation from human society. The separation is real. It’s fine to argue... we must learn to fit in with nature, to recognize that we are but one species among many... But none of us, on the inside, quite believes it. (McKibben 1989: 60).

This statement elicits a variety of criticisms: chiefly, to whom does “us” refer? Certainly not all humans define nature this way, as evidenced by Coates’ definition in the previous paragraph and James Lovelock’s claim that “our species with its technology is simply an inevitable part of the natural scene” (Quoted in McKibben 1989: 59). I think there’s some validity to McKibben’s statement: Humans represent a unique part of nature. However, I disagree with his dualistic approach to humans and nature. To say humans have ended nature makes no sense on a non-

dualistic view, because we are a manifestation of nature and cannot destroy it without destroying ourselves as well, a consequence most of us find unappealing.

McKibben also seems to conflate interaction and harm, making human interactions with the natural world intrinsically detrimental to it. This reasoning seems to imply that nature is perfect, or at least not amenable to human improvements, and human interference with nature can only do harm. Yet, if humans are understood as a part of nature then how can this be? It's worth noting here that the affirmation that humans are part of, not apart from nature, certainly does not mean these interactions are beyond moral judgment, for humans are able to reflect on their environmental actions in the way members of other species cannot. And many human actions do harm other parts of the environment. Indeed, human actions affect the environment in a myriad of ways, some good and some bad, yet, as creatures intrinsically linked to the natural world, we feel the effects of these actions too. McKibben doesn't deny this, but he seems transfixed with blaming humans for what he sees as "the end of nature." This famous phrase epitomizes the ambiguity and disputes underlying the definition of nature.

Problems with the terminology of "nature" are linked to problems with the terminology of "environment." The notion of "the environment" as separate from humans, which is implied even in its etymology as "that which surrounds," may also enable humans to see it as something separate and inferior to them, allowing human exploitation of nonhuman nature. The separation of humans from nature, or the environment, does one of two things: it either makes the world's nonhuman environment seem superior (pure, pristine) or inferior (a resource for use) to human beings. What it fails to do is portray the natural world as something humans are a part of and in which we participate. This phenomenon requires closer inspection, because it underlies one of

the fundamental problems in environmental ethics. We will return to this point later. For now let us return to the issues raised in Bill McKibben's *End of Nature*.

My main disagreement with McKibben is his portrayal of humans as necessarily antagonistic to the natural world. In his view, nature has not died; we have killed it. William Cronon's deliberately facetious interpretation suggests, "if nature dies because we enter it, then the only way to save nature is to kill ourselves" (Cronon 1998: 83). Here Cronon demonstrates the absurdity of McKibben's tautology: if nature "is the only thing worth saving, and if our mere presence destroys it, then the sole solution to our own unnaturalness, the only way to protect [nature] from profane humanity, would seem to be suicide" (ibid.). Once again we encounter the issue of defining nature. If the natural world encompasses all things, biotic and abiotic, then humans are a part of the natural world. If this is the case then causing our own extinction would appear just as detrimental as causing any other species' extinction, because it would violate the deep ecologist's idea of species egalitarianism – all organisms and entities in the ecosphere, as parts of the interrelated whole, are equal in intrinsic worth (Pojman 2008: 230). Nevertheless, McKibben goes on to say: "We as a race turn out to be stronger than we suspected – much stronger. In a sense we turn out to be God's equal – or, at least, his rival – able to destroy creation" (1989: 72). The underlying problem with this statement, aside from its sensationalist claim, is what it overlooks. Certainly humans have evolved in such a way as to become the dominant species on Earth, but I seriously doubt we have developed the capacity to destroy "creation." Even after the greatest known extinction in history, the Permian–Triassic extinction, which occurred 251 million years ago killing almost all marine life and three quarters of terrestrial life, biotic life continued to evolve and biodiversity was reestablished on Earth (Benton 2005). Bearing this in mind, I see no way for humans to completely 'end nature.' We

may severely deplete natural resources and even cause our own destruction, but I believe it is foolish, even arrogant, to assume that one part of nature (humans) possesses the capability to annihilate the entire planet's biotic and abiotic systems. Nevertheless, many environmentalists still adhere to Bill McKibben's dualistic approach to mankind and nature, which overlaps with another important and highly disputed subject: the wilderness.

SECTION II: THE MYTH OF WILDERNESS

The interpretation of "wilderness" also plays a key role in this discussion, because it affects not only the development and execution of many environmental initiatives, but also how those projects, in turn, affect both people and the rest of the environment. Naturally, the various interpretations of wilderness often serve as points of contention between environmental philosophers. So, what is wilderness? The United States' Wilderness Act of 1964, defines wilderness as follows:

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 untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions... (US Fish & Wildlife Service)

The U.S. government's definition corroborates Bill McKibben's notion of wilderness, which he deems, "the separate and wild province, the world apart from man" (McKibben 1989: 45). He proclaims North America's pre-Columbian inhabitants "treated [the land] fairly well" so that "in

many places it was wilderness” (ibid. 45). However, William Denevan quickly dispels this idealistic notion of the pristine state of the Western Hemisphere before 1492.

In an article entitled, “The Pristine Myth: The Landscape of the Americas in 1492,” Denevan states, “The Pristine view is to a large extent an invention of nineteenth-century romanticist and primitivist writers such as W.H. Hudson, Cooper, Thoreau, Longfellow, and Parkman...” (Denevan 1992: 369). According to Denevan, the American landscape encountered by Europeans in the late 15th and early 16th centuries was anything but virgin, untouched wilderness. He writes, “The Native American landscape of the early sixteenth century was a humanized landscape almost everywhere. Populations were large. Forest composition had been modified, grasslands had been created, wildlife disrupted, and erosion was severe in places. (Denevan 1992: 369).

In fact, Denevan and other scholars estimate the population of the Americas before the arrival of Columbus to be anywhere from 43-65 million people. Denevan himself estimates the population of the pre-Columbian Western Hemisphere at 53.9 million people, which he divides into “3.8 million for North America, 17.2 million for Mexico, 5.6 million for Central America, 3.0 million for the Caribbean, 15.7 for the Andes, and 8.6 million for lowland South America” (Denevan 1992: 370). These numbers, even if not exactly precise, refute any claims that the Americas were devoid of huge populations, and thus primarily composed of unspoiled wilderness, before the arrival of Europeans.

Yet if so many native peoples populated the Americas before the arrival of Columbus, why did many Europeans encounter landscapes devoid of human influence and sparsely populated? The answer lies primarily in diseases endemic to Europe but previously nonexistent in the Americas. Europeans had considerable immunity to diseases, such as smallpox, measles

influenza, typhus, bubonic plague, because these illnesses had circulated through European populations for centuries. Native Americans, however, had never been exposed to these pathogens. Epidemics spread rapidly among indigenous communities, leaving their populations decimated by disease before European explorers and conquistadors even reached them. Jared Diamond estimates that 95 percent of pre-Columbian, native populations were wiped out by European diseases and conquests by the mid 17th century (Diamond 1999: 78), and William Denevan calls it “the greatest demographic disaster ever” (Denevan 1992: 370). This population catastrophe explains the false European notion of the “New World.”

An American landscape completely bereft of human influence has not existed in millennia. Such a revelation weakens McKibben’s core argument, dispelling his notion of unspoiled wilderness by exposing the heavy influence human inhabitation had upon pre-Columbian, American landscapes. William Cronon notes: “For many Americans [the concept of] wilderness stands as the last remaining place where civilization, that all too human disease, has not fully infected the earth” (1996: 69). However, Cronon rejects the wilderness premise, that nature must be untouched by humans in order to be natural, by claiming wilderness “is not a pristine sanctuary where the last remnant of an untouched, endangered, but still transcendent nature can... be encountered without the contaminating taint of civilization. Instead it is a product of that civilization, and could hardly be contaminated by the very stuff of which it is made” (1996: 69). It is worth noting that he is not referring to “wilderness” as a place but rather as an idea that perpetuates the dualism of humans and the rest of the natural world.

Crono

n rejects the romantic notion of wilderness as a socially constructed human myth. To him wilderness embodies a dualistic vision in which humans are entirely outside the realm of the

natural and he cautions, “people should always be conscious that they are part of the natural world, inextricably tied to the ecological systems that sustain their lives.” Furthermore, he says: “Any way of looking at nature that encourages us to believe we are separate from nature – as wilderness tends to do – is likely to reinforce environmentally irresponsible behavior” (Cronon 1996: 87). Many ecologically minded environmentalists disagree with Cronon’s opinion, claiming the only way to save nature is by not interfering with it, but I believe Cronon’s view is justified on the basis of his first statement: Humans must be regarded as part of nature. In the following sections, I will examine some prevailing environmental philosophies and how they regard humans’ role in the natural world.

SECTION III: THREE PERSPECTIVES ON ENVIRONMENTALISM

As stated in the opening paragraphs of this thesis, the ecological health of nonhuman natural systems benefits mankind. Let us now examine how humans *can* benefit their environment as well as why they *should* do so on an ethical level. To begin this examination of ethics, let us ask a surprisingly complex question: who and what deserves moral consideration? One critical aspect of moral thinking depends on the answer to this question, so I will outline some of the major positions here: strong anthropocentrism, deep ecological ecocentrism and weak anthropocentrism.

A. STRONG ANTHROPOCENTRISM

The first perspective I will examine, “strong anthropocentrism,” regards humans as the central and only directly morally significant entities in the universe. Only human beings have moral worth. One explanation for this was put forward by Immanuel Kant, the 18th century German philosopher. He argues that only “rational beings” – i.e. [some] human beings – have

moral worth because they have free will, whereas animals do not. He states, “So far as animals are concerned, we have no direct duties. Animals are not self-conscious and are there merely as a means to an end. That end is man” (Pojman 2008: 64; Rachels 2007: 130). He argues that humans have intrinsic worth, because they are rational agents, meaning that they have the capacity to govern their conduct by reason. Moreover, most humans have complex goals and reflective desires, attributes nonhuman animals and things lack*. On this basis, Kant reasons that nonhuman entities possess no intrinsic value and may only become valuable as means to a human’s ends, allowing humans to dispose of them as they please (Rachels 2007: 130).

Holly L. Wilson further explains Kantian anthropocentrism in her book, *Kant’s Pragmatic Anthropology*. She states, “Kant assumes animals are driven by instincts rather than by concepts of laws and in this way, animals, though like human beings, are different from human beings” (Cited in Pojman 2008: 67). But aren’t human beings animals as well? Yes, and Kant agrees with this statement, as seen by his reference to humans as *animal rationabilis*, or animals with the capacity for reason (ibid. 68). However, using this same logic, Kant argues humans are superior to nonhuman animals. As Wilson states: “For [Kant], human dignity depended on human beings distancing themselves from their animality.” (ibid. 65). This very strong anthropocentric belief has made Kant a highly scrutinized and largely unpopular figure with nonanthropocentric environmentalists.

The problem some nonanthropocentric environmentalists have with Kant lies in their false assumptions concerning his perspectives. They fear Kant’s strong anthropocentrism justifies animal cruelty and the destruction of the environment, but these outcomes are far from

* While it is important to note critics’ charges that infants, fetuses and people with severe disabilities would not meet the criteria for moral consideration as outlined by Kant either, these issues are not relevant to this thesis.

Kant's intent. In his opinion, human "duties toward animals are merely indirect duties towards humanity." Kant does not justify the mistreatment of animals; in fact, he condemns animal cruelty, because "he who is cruel to animals becomes hard also in his dealing with men" (Cited in Pojman 2008: 64). Additionally, because Kant assigns value to things used by humans in achieving their goals, he would hardly advocate the destruction or abuse of ecological systems, because their health and maintenance are crucial to future humans' wellbeing.

Kant is not an environmentalist (it would be an anachronistic term to use, in any case) but he certainly is not an environmental antagonist either. He does not advocate destroying the nonhuman aspects of Earth, but simply asserts the value of humans above all else. Nevertheless, I do not believe his views provide a sufficient basis for environmental policy and action, because in claiming nonhuman animals and things have value only insofar as humans assign them it, Kant establishes a dualism between humankind and the rest of the natural world. Kantian anthropocentrism relies on this dualism and, ironically, so does its antithesis, deep ecology.

B. DEEP ECOLOGY

Deep ecology claims the value of nonhuman organisms species, ecosystems and natural processes outweighs the interests of humans alone. Deep ecologists argue all living organisms have intrinsic value, but so do ecosystems and species – that is, deep ecologists adopt a form of ecocentrism. J. Stan Rowe defines ecocentrism as adopted by deep ecologists as follows:

The ecocentric argument is grounded in the belief that compared to the undoubted importance of the human part, the whole Ecosphere is even more significant and consequential: more inclusive, more complex, more integrated, more creative, more beautiful, more mysterious, and older than time. The "environment" that anthropocentrism misperceives as materials designed to be used exclusively by

humans, to serve the needs of humanity, is in the profoundest sense humanity's source and support: its ingenious, inventive life-giving matrix. Ecocentrism goes beyond biocentrism with its fixation on organisms, for in the ecocentric view people are inseparable from the inorganic/organic nature that encapsulates them.

(Rowe 1996:104)

Of particular relevance to this thesis is Rowe's extension of nature to include humans. It should not be assumed that deep ecologists completely reject the idea of man being a part of nature; most of them don't. They simply believe all elements of the biosphere, human and nonhuman, have equal intrinsic worth, opposing the strong anthropocentric idea of human superiority amongst fellow species. Arne Naess, the father of deep ecology, refers to the movement's philosophical basis as ecosophy, which argues humans have no right to destroy natural systems, because nature does not belong to man, and furthermore, nature is worth defending regardless of humanity's fate (Cited in Pojman 2008: 226). Many aspects of ecosophy are direct responses to Kantian anthropocentrism. Writing about this phenomenon, Ben A. Minteer argues that deep ecologists pursue "the articulation of a new nature-centered or nonanthropocentric worldview and an alternative set of moral principles able to account directly for the good of nonhumans and the natural world as a whole" (Minteer 2009: 4). The nonanthropocentric perspective regards human needs, goals, and desires as similar to those of any other species and refutes the Kantian notion of rational humans' inherent right to manage the world.

Several deep ecological arguments focus on the holistic health of all Earth systems. Rowe advocates a scientifically based shift from what deep ecologists perceive as mankind's predominately anthropocentric belief system to one in which "Earth, not humanity, is the Life-center." Failure to do this will result in "people [being] a crippling or death-dealing pox on the

world” (Rowe 1994: 106). Rowe’s view strikes me as more of a doomsday prediction, than a totally logical one. For, although I believe a shift towards a more ecologically conducive perspective must occur to ensure long-term ecological health, to expect all human objectives to be strictly ecocentric makes little sense for several reasons.

The first reason is quite simple, it opposes Rowe’s claim that, “logic points to the ecocentric proposition that people exist solely for the sake of the world,” by questioning this logic. Certainly the world and biotic life existed before human beings, for billions of years in fact; and the probability both will continue to do so after our species goes extinct appears quite likely. Take, for instance, the dinosaurs. Granted, they probably did not possess the social or intellectual capabilities of modern humans, but they still dominated life on Earth for 160 million years. So if humans, presumably like the dinosaurs, exist only for the purposes of the Earth, what are those purposes if the Earth and life upon it continue to survive despite major mass extinctions? I admit we certainly constitute a highly influential species amongst all of Earth’s biotic forms, but we were created by evolution, not for the sake of the planet or any other logical reason, religious beliefs aside.

Another argument against Rowe’s belief that humans exist for the sake of a separate world (i.e. the natural world) depends on the premise that the world has interests of its own. Yet, as Roger Paden notes, “nature is not goal-directed and, therefore... it can have no interests” (Paden 2003). Paden states that ecosystems can have no goals, because stability is not a goal of ecosystems but rather a result of the goal-directed behavior of the organisms within them, such as plants and animals. Hence, if natural systems have no goals then they also have no interests (Paden 2003). This statement may sound similar to Kant’s argument, but there is a key difference. While Kant claims only humans have goals and desires, Paden includes all sentient

organisms as having goal-oriented behavior, making them morally relevant. This distinction is critical, because nonhuman organisms behave in an indisputably goal-oriented manner, even if those goals are simply to survive and procreate.

Additional difficulties with deep ecology stem from the movement's idealistic base. Arne Naess admits "the norms and tendencies of the Deep Ecology movement are not derived from ecology by logic or induction" but rather from philosophical principles (Cited in Pojman 218). Furthermore, Bill Devall and George Sessions note, the tenets of deep ecology "cannot be validated... by the methodology of modern science" (ibid. 229). Although deep ecology has inspired some of the most radical environmental defense groups like Earth First! and the Earth Liberation Front, it often provides a weak basis for policies governing human interactions with the nonhuman environment, such as in the agricultural sphere. I believe the wellbeing of many of Earth's present and future biotic systems ultimately rests upon action, specifically human, policy-based action. As Richard Watson says: "Human interest in survival is the best ground on which to argue for an ecological balance which is good both for human beings and for the whole biological community" (Watson 1983). This statement embodies an environmentally pragmatic approach known as weak anthropocentrism, which I believe provides the best approach to future environmental ethics, policy and action.

C. WEAK ANTHROPOCENTRISM

A budding field in environmental ethics, weak anthropocentrism, which can be seen as a form of environmental pragmatism, provides a middle ground between strictly anthropocentric and radical ecocentric philosophies. One philosopher responsible for this new approach, Bryan Norton, argues that many of the nonanthropocentric perspectives of deep ecology are conceptually flawed, because they advance the idea that all anthropocentric perspectives harm

the environment. He also argues against the exploitive and economic portrayal of anthropocentrism in environmental ethics. Ben A. Minteer writes:

Norton's argument demonstrated how the normative "widening" of anthropocentrism to countenance the full array of human goods in nature beyond narrow market values, and the temporal extension of these values so that they are properly understood as constraints imposed by the obligation to ensure resource stability for future generations, could put environmental humanism on much more solid ethical footing. (Minteer 2009: 9).

Norton argues that the widely perceived chasm between anthropocentrists and nonanthropocentrists is largely exaggerated, claiming that both philosophies embrace values that fundamentally depend on the long-term health of ecological systems.

Norton argues that the "value dualism" that has created deep divisions in environmental ethics is counterproductive. Instead of arguing over issues of environmental ethics in a vain attempt to find a universally accepted concept of environmental values, both anthropocentric and nonanthropocentric environmentalists should realize what they have in common. Norton calls this reconciliation his "convergence hypothesis" (Norton 1991: 240). The rationale behind this claim is as follows: the only way to ensure long-term health of ecological systems is by maintaining ecological processes, regardless of whether this initiative is justified by the anthropocentric concern for the wellbeing of present and future generations of humans or by the ecocentric belief in the intrinsic value of ecological systems themselves.

Brian K. Steverson claims Norton is trying to develop an approach to environmental management capable of accommodating both ecocentric perspectives and socioeconomic

concerns without requiring either side to make great sacrifices (Steverson 1995: 135-150).

Norton himself concludes:

Introducing the idea that other species have intrinsic value, that humans should be 'fair' to all other species, provides no operationally recognizable constraints on human behavior that are not already implicit in the generalized, cross-temporal obligations to protect a healthy, complex, and autonomously functioning system for the benefit of future generations of humans. (Norton 1991: 226-227).

Though this view is sometimes contested, the best way to achieve the goals of both weak anthropocentrists and deep ecologists, Norton argues, lies in environmental policy. His methodology, however, raises opposition from both groups, because it reasons that even with divergent philosophical commitments, agreements on policy are possible.

Critics, such as Brian K. Steverson, argue for the need to make strong ecocentric policy goals, because a failure to do so might "result in a serious weakening of environmental protection as the moral authority of 'nature first' environmentalism," leaving natural systems vulnerable to human consumption and abuses (Minteer 2009: 13). This is precisely the problem with deep ecological thinking: it often separates man from nature instead of incorporating him into it. This could engender more harm than good to all parts of the natural world.

Norton criticizes deep ecologists for their commitment to an impractical, nonhierarchical ideology that claims that all individual organisms are of equal inherent worth, an approach which is abstract and philosophical rather than a plausible method for environmental policy and action (ibid. 23). In response to Steverson's criticism of his views on deep ecology, Norton contends, "It is not clear to me whether Steverson believes that... 'nonhuman nature' and 'all species' are synonyms" (Norton 1997: 88). He continues, "This semantic ambiguity is crucial, because if the

two phrases are synonyms, then it is impossible for there to be a divergence between policies to protect species and policies to protect nature” (ibid). The rationale behind this is if deep ecologists value the protection of specific species as well as the health of entire ecosystems, they will have no basis for making policy discriminations in at least some situations.

Norton uses the case of the snail kite in the Everglades to prove his point. In 1992 *Science* magazine reported that efforts to reestablish the pulse regimen of the water flow in the Everglades could further endanger the snail kite, by depleting its feeding grounds. Norton notes deep ecologists’ idealistic ambiguity as to what has intrinsic value, individual species or ecological holistic health, creates an impasse in deciding what action to take. On the one hand, draining the holding area constituting the kites’ feeding grounds could wipe out this particular species. On the other, saving the kite may jeopardize the wellbeing of other species over time. Norton writes, “The only thing to do in these cases is to step from behind the façade of intuitionism, and set aside generalizations about ultimate values, and look at the real-world situation” (Norton 1997: 92). He calls this approach “contextualism,” which advocates “addressing the question of conservation targets, especially whether to emphasize species or ecosystem processes, on a case-by-case basis” and seeking “relevant scientific and other empirical information to guide policy” (ibid 92, 97).

I believe Norton’s weak anthropocentrism approach to environmentalism provides the most logical, ethical and effective means of addressing environmental issues. It does not separate humans from nature, nor does it morally justify human abuses of natural resources, but rather advances the notion of humans as a part of the natural world while giving assigned value to the ecological health of nonhuman natural systems. I find his argument particularly convincing, because it establishes a foundation for environmental action instead of theorizing about moral

philosophy and environmental ethics. In order to maintain ecological health, and in so doing preserve our species, humans must approach the environment not as a mere instrument or a sublime myth, but rather as our home. With this goal in mind, the focus becomes how to achieve it, and the best way to ensure environmental longevity, I'll maintain, is by preserving and protecting biodiversity.

SECTION IV: THE IMPORTANCE OF BIODIVERSITY

An effective method of maintaining the wellbeing of Earth's biotic systems is the preservation of biodiversity, as Arne Naess states, "Diversity enhances the potentialities of survival, the chances of new modes of life, the richness of forms" (Cited in Pojman 2008: 216). Defining biodiversity in a single, succinct manner, however, proves almost impossible. For the purposes of this thesis I will use its most widely accepted definition, agreed by a consensus of scientists at the 1992 United Nations Earth Summit in Rio de Janeiro. Here biological diversity is defined as "the variability among living organisms from all sources, including, 'inter alia', terrestrial, marine, and other aquatic ecosystems, and the ecological complexes of which they are part: this includes diversity within species, between species and of ecosystems" (UNCED 1992). Robert M. May estimates the number of species on Earth to be anywhere from 3 million to 30 million (May 1990: 293). These estimates are widely held to be correct among ecologists and biodiversity experts, and if correct, then roughly fifteen times as many species as we now know may remain undiscovered. Estimates like this led Donella H. Meadows to further define the purpose of preserving biodiversity as, "the job of protecting all life – microscopic creepy-crawlies as well as elephants and condors – and all life's habitats – tundra, prairie and swamp as well as forests" (Cited in Pojman 2008: 267).

Meadows provides three reasons why biodiversity conservation matters: immediate and potential economic value, performance of priceless environmental services, and most importantly, the preservation of genetic diversity. Using a clever comparison, she declares:

Biodiversity contains the accumulated wisdom of nature and the key to its future.

If you ever wanted to destroy a society, you would burn its libraries and kill its intellectuals. You would destroy its knowledge. Nature's knowledge is contained in the DNA within living cells. The variety of that genetic information is the driving engine of evolution, the immune system of life... (Cited in Pojman 2008: 268)

I believe Meadows' metaphor is quite apt. As any ecologist would admit, the higher amount of genetic variation among a species, the greater the chances said species will have to adapt and evolve over time to changing conditions. This is important for many reasons, but the greatest of all is the interconnected existence of all species, because the loss of a single species may affect entire ecosystems. If many species go extinct, not only may single ecosystems be affected, but the entire biotic community on Earth could be affected, depending on the number of species that disappear.

Whereas I agree with the importance of maintaining biodiversity, I disagree with Meadows' belief that all nature needs to function is to be left alone (Pojman 2008: 269). Here I believe she succumbs to the faulty, deep ecological human/nature dichotomy previously examined in this essay. As Jared Diamond notes, by 10,000 BC human groups inhabited every continent except for Antarctica. It follows then that humans have affected life on almost every continent for at least 12,000 years now, and in places like Africa, Europe and Asia, for hundreds of thousands of years (Diamond 1999: 37). Thus, most forms of life on this planet have been

influenced by human existence either directly or indirectly, and human evolution, especially over the last 10,000 years, has depended heavily on the relationship between humans and nonhuman animals; it is thus impossible to separate the two groups. Yet some biodiversity conservationists argue that human absence is necessary to preserve biodiversity, even at the cost of human wellbeing. Others espouse a more moderate claim: *at least some* biodiversity has developed without human presence and needs human absence to continue. Bearing in mind the principles of weak anthropocentrism, let's examine the pros and cons of biodiversity conservation.

SECTION V: CONSERVATION

Carl F. Jordan defines conservation as “a philosophy of managing the environment in a way that does not despoil, exhaust, or extinguish” (Jordan 1995: 3). The Merriam-Webster dictionary defines it as “a careful preservation and protection of something; especially planned management of a natural resource to prevent exploitation, destruction, or neglect.” These definitions are vague at best, but so is what constitutes the field of conservation. Differing interpretations of what it entails create contrasting approaches to its implementation. For instance, a strong anthropocentrist would regard conservation of any nonhuman being or process as pointless unless it directly benefited humans in some way, while a deep ecologist would embrace conservation as a means of protecting the natural world from human antagonism. Nevertheless, what's most important here is what a weak anthropocentric perspective would advocate or deny.

Many forms of conservation exist, but for the purposes of this thesis the focus will be on biodiversity/habitat conservation. Biodiversity conservation is a complex field, and conservation biologists often can't predict exactly what the effects of a given species' loss would be due to

unknown interdependencies. Also, conservationists' efforts often run into complications due to human elements. Consequently, biodiversity conservationists have been forced to admit that biological science alone cannot accomplish the goals of protecting ecosystems and habitat; it must be complemented by social science research as well (Clayton and Myers 2009:164). Here's where a weak anthropocentric vision of conservation becomes the best option.

Bryan Norton believes biodiversity conservation needs to establish a goal of maintaining the ecological health of natural systems that neither exploits natural resources nor isolates nonhuman nature, thus separating it from human activities. This paradigm must recognize the usefulness of human involvement in the healthy upkeep of these systems. He also argues for the swift implementation of this new paradigm, which depends on environmentalists accepting and disseminating contextual thinking to educate the public in the ecological, systematic perspective on nature (Norton 1991: 255). Thus, the weak anthropocentric approach to biodiversity conservation requires humans to recognize their role in a greater ecological context, one defying the constraints of strict ecocentrism and strong anthropocentrism, which are described in the following section.

SECTION VI: THE TROUBLE WITH TRADITIONAL CONSERVATION

Current biodiversity conservation initiatives generally follow an ecocentric agenda. They often emphasize the preservation of species without considering the consequences of such a single-minded approach. One manifestation of such an approach is called environmental imperialism, or eco-imperialism, referring to the tendency of some environmentalists from developed nations to institute ecocentric biodiversity preservation initiatives in developing nations without considering the customs or culture of the residents in those regions. The term

comes from Paul Driessen, who coined it in his 2003 book, *Eco-Imperialism Green Power, Black Death*. Driessen compares eco-imperialism to the European conquests of the Americas and Africa, declaring that eco-imperialist actions abuse developing nations for the benefit of the developed world. Driessen also accuses environmental groups of hypocrisy by demonstrating how many of their actions contradict their mission statements (Driessen 2003).

An example of the detrimental effects of environmental imperialism is evident in the uprooting of indigenous peoples in regions of Amazonia in order to protect biodiversity. The rationale behind the displacement of native peoples is that the preservation of biodiversity in these ecosystems outweighs concerns for native inhabitants. In the words of one Conservation International biologist in Kayapó, Brazil: “Quite frankly, I don’t care what the Indians want. We have to work to conserve the biodiversity” (Chapin 2004: 21). Paige West and her colleagues indict this perspective: “The imposition of this putative nature/culture dichotomy has had significant material and social impacts, either by forcefully excluding people from their land or holding them to discursive standards that are nearly impossible to live up to in practice” (West et al. 2006: 256). The case of indigenous displacement in biodiversity conservation practices provides a great example of the human/nature dichotomy attached to strict ecocentrism.

Mac Chapin corroborates Driessen and West’s indictments in his examination of the three major conservation agencies – World Wildlife Fund (WWF), The Nature Conservancy (TNC), and Conservation International (CI) – entitled “A Challenge to Conservationists.” This article, which first appeared in *World-Watch* in late 2004, charged the three environmental giants with cultural ignorance and a disregard for indigenous peoples’ land-use rights in favor of a strictly biological approach to their conservation efforts. Demonstrating these conservationists’ ignorance of humans social and economic elements interconnected with their initiatives, Chapin

cites the failures encountered when the Coordinating Body of Indigenous Organizations of the Amazon Basin (COICA) tried to work with conservationists to preserve the Amazon rainforests. The objective of the indigenous groups was “to combine human rights considerations with practical suggestions for action in the areas of sustainable development, territorial defense, conservation, and research” (Chapin 19). As COICA declared in an appeal entitled “Two Agendas for Amazonian Development”:

We, the Indigenous Peoples, have been an integral part of the Amazon Biosphere for Millennia. We have used and cared for the resources of that biosphere with a great deal of respect, because it is our home, and because we know that our survival and that of our future generations depends on it. Our accumulated knowledge about the ecology of our home, our models for living with the peculiarities of the Amazon Biosphere, our reverence and respect for the tropical forest and its other inhabitants, both plant and animal, are the keys to guaranteeing the future of the Amazon Basin, not only for our peoples, but also for all humanity.

The indigenous appeal embodies the weak anthropocentric approach advocated by Norton. They argue that their intimate knowledge of the ecosystems surrounding them and the practices they have evolved to maintain them, in no way harm the ecological health of these systems, and may actually aid them.

Another key question arises from this situation. Wouldn't removing native people from ecosystems they have coexisted with for thousands of years be more damaging than leaving them alone? As shown earlier, deep ecologists argue for a hands-off approach to nature, but in this case the native people *are* nature. Although I believe all humans everywhere are a part of nature,

I think the case of the COICA is a wakeup call to ecocentric conservationists. Certainly the removal of a biotic element, human or nonhuman, from a habitat in which it has coexisted sustainably with all other elements of that habitat for millennia would defy the beliefs of any biodiversity conservationist. So why does this logic fail when the element being removed is a human being? It doesn't. The logic remains sound; the ecocentrist perspective of humans as environmental antagonists instead of as parts of the natural world is what fails. Fortunately, some biodiversity conservation agendas are changing, adopting a more human-oriented approach.

SECTION VII: HOPE FOR CONSERVATION

A growing number of Northern environmentalists have begun to recognize the importance of incorporating the perspectives of indigenous peoples living in the biodiversity hotspots they want to protect. Kai Chan and his colleagues write:

Conservation should benefit ecosystems, nonhuman organisms, and current and future human beings... The crux of conservation is the relationship between people and the landscapes that house biodiversity, and the appropriate nature of that relationship has been debated at length within the conservation community.

(Chan et al. 2007: 59)

Still, Chan and his co-authors acknowledge the challenges facing conservation practices. They write, "tension among these goals engenders potential ethical conflicts: conservationists' true motivations may differ from the justifications they offer for their activities, and conservation projects have the potential to disempower and oppress people" (Chan et al. 2007: 59). The solution the authors advance requires biodiversity conservationists and researchers to consider and respect any social issues that may arise as a result of their research methods. This solution

requires a shift in emphasis from strict ecocentrism to one with concern for environmental justice, which I think weak anthropocentrism can incorporate nicely.

Although not as philosophically rigid as Kantian anthropocentrism, environmental justice still focuses much more on the wellbeing of humans than the other aspects of the natural world. Although this idea separates human from the rest of the biotic community, it nevertheless contains some important ideas concerning human considerations in environmental initiatives. The 1991 Principles of Environmental Justice Protection presents seventeen tenets of environmental justice. A few examples of the most pertinent principles are listed below.

Principle 2: Environmental Justice demands that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias.

Principle 3: Environmental Justice mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.²

Principle 5: Environmental Justice affirms the fundamental right to political, economic, cultural and environmental self-determination of all peoples.

Principle 12: Environmental Justice affirms the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature, honoring the cultural integrity of all our communities, and provided fair access for all to the full range of resources.

Principle 14: Environmental Justice opposes the destructive operations of multinational corporations.

² The mention of non-humans' interests is atypical of environmental justice

Principle 16: 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.

These principles align with weak anthropocentric approaches to environmentalism by supporting human-based environmental responsibility. They advocate the maintenance of natural systems, responsible use of natural resources and preservation of nonhuman species through the perspective of human wellbeing. The Principles of Environmental Justice acknowledge that the interests of future humans rely on the tangible benefits (potential cures for disease, genetic diversity, healthily functioning ecological processes, etc.) and intangible benefits (aesthetic, intellectual and spiritual enrichment) and ecological services (oxygen production, air and water purification, primary production, plant pollination, etc.) the natural world provides for humans. Hence, these principles outline a pragmatically anthropocentric approach to environmental action without placing too much emphasis on human designs for environmental usage, which often leads to environmental irresponsibility. Unfortunately this environmental tactic is often eschewed in favor of stronger anthropocentric strategies of human self-interest. Unlike ecocentrists, who value the nonhuman aspects of nature over humans, strong anthropocentrists believe the nonhuman aspects of nature exists solely for human consumption, understood in a narrow way over place and time. This perspective threatens the goal of ecological health by placing all aspects of the natural world at the disposal of a single member of that community. The following section illustrates the dangers of such an approach through the failures of the ecotourism industry.

SECTION VIII: ANTHROPOCENTRISM IN ECOTOURISM

In recent decades, as environmental issues have received more public attention, a new industry has arisen to capitalize on this sudden interest, ecotourism. The International Ecotourism Society defines ecotourism as responsible travel to natural areas that conserves the environment and sustains the wellbeing of local people. This definition sheds a very positive light on ecotourism, but this positive sense can be questioned. Erlet Cater states, “in the same way that Macnaghten and Urry suggest that there is no single nature, only natures, it therefore follows that nature tourism will be variously constructed by different societies and therefore that there will be multiple nature tourisms. (2006: 23). Cater criticizes the “uncritical acceptance of Western-constructed ecotourism and a failure to recognize that there is no universal or unique understanding will only serve to reinforce rather than reduce the very inequalities that it may attempt to reduce” (ibid).

In fact, many facets of ecotourism are neither sustainable nor do they support the wellbeing of local peoples. Tourism businesses see ecotourism as a new way to market the rising public fascination with “the environment” by advertising tourism in “wilderness areas.” The façade ecotourism presents often neither empowers local peoples nor maintains the health of local ecosystems. Joseph Stiglitz, the former chief economist for the World Bank, reveals the sad reality of at least some forms of ecotourism, maintaining that the industries behind it care more about “expanding free markets than improving the quality of life for people or protecting local environments,” and the implementation of many ecotourism programs has “deepened poverty, not alleviated it” (Cited in McLaren 2003: 95). These failures in mainstream ecotourism characterize the stereotypical economic basis of anthropocentric environmentalism, against which Norton warned. Unfortunately, ecotourism is not the only industry benefitting from the

exploitation of nature, human and nonhuman. The following section presents a case study in the detrimental effects of overly anthropocentric policymaking decisions.

SECTION IX: GENETICALLY MODIFIED CROPS

Genetically Modified Crops (GMCs) provide an example of a modern environmental issue where neither deep ecological, nor strong anthropocentric philosophies seem helpful, and in which human and nonhuman interests may coincide. Although only developed in the last thirty years, genetic modification (GM), or genetic engineering (GE), raises significant environmental, social and ethical issues. This section focuses specifically on the genetic modification of soybean crops in Brazil, but first I want to establish a philosophical basis for this discussion. Genetically modified crops are bred for the explicit purpose of agriculture, which is obviously an anthropocentric venture. Humans domesticate and cultivate crops and nonhuman animals for the explicit purpose of human use, and according to Jonathan Rauch, “of all the human activities that shape the environment, agriculture is the single most important, and it is well ahead of whatever comes second” (Cited in Pojman 477). Needless to say, Kantian anthropocentrism would fully support these practices while deep ecologists would approach many aspects of modern agricultural practices with skepticism, if not downright opposition.

Many deep ecologists and other environmental ethicists reject the notion of genetic modification simply on principle. Those who believe in a human/nature dichotomy may argue that genetic engineering is *unnatural*, because it tampers with evolutionary biological processes. Proponents of this view often criticize genetic modification as playing God. Another deep ecological criticism of genetic modification expresses the concern that genetic modification is but another form of human domination of the natural world. Clare Palmer writes, “It has been

argued that genetic engineering is an extension of a technological mentality... which regards all living things as material available for human exploitation..." (Palmer 1997: 76). This opposition to genetic engineering is closely linked with concerns for the biological integrity of non-modified organisms. Essentially, these ethicists argue that tampering with the genetic code of any organism damages its natural biological nature, thus destroying the intrinsic essence of the species. These arguments reject the idea of GMCs just on principle; however, there are also debates about the effects of these crops in practice.

Several ethicists regard GMCs with skepticism or reject their implementation outright because they argue that the consequences of planting them are unpredictable. Genetic modification of any organism, especially crops in this case, poses the potential threat of modified crops crossbreeding with or outcompeting unmodified crops, thus establishing a new, altered and potentially damaging ecosystem. Although GMCs are rendered infertile by biotech companies for financial reasons, fears about potential cross-pollination or supplanting of unmodified strands by their modified counterparts still permeate arguments about growing such cultivars. Skeptics also question the lack of genetic diversity in modified strands and the potential damage ensuing from increased herbicide usage. This last fear stems from many GMCs' ability to resist glyphosate (patented as Roundup by U.S. biotech company Monsanto) and other herbicides, allowing farms to apply these chemicals indiscriminately across their fields with the result of only killing weeds without harming the crops. These apprehensions reflect many of the criticisms about GMCs, but there are also potential advantages to GMCs. From an anthropocentric point of view, GMCs may provide many benefits to humans.

These potential advantages include the inverse of the pesticide concern previously presented. Biotech companies engineer GMCs to adapt to and excel in adverse conditions so

perhaps their development could reduce fertilizer and pesticide inputs or perhaps higher yielding strands could reduce the land necessary for cultivation. Rauch writes, “If properly developed, disseminated, and used, genetically modified crops might well be the best hope the planet has got” (Cited in Pojman 480). Rauch’s belief is shared by several anthropocentric environmentalists. Indeed it is difficult to argue against such a broad statement, especially when there is currently no way to prove or disprove his prediction. I, however, regard this claim with a measure of skepticism. While I acknowledge the potential of GMCs to feed impoverished peoples and possibly even reduce the amount of land needed for cultivation (though I seriously doubt this claim), I think it is unwise to rely on technology to fix a problem of such magnitude and complexity.

Discussing the pros and cons of GMCs would be incomplete without considering the human population issues that arise from their increasing cultivation. Most arguments favoring these cultivars point to their ability to feed more starving people, but they often disregard the negative consequences of feeding an ever-growing human population. Neo-Malthusians, who worry that overpopulation may increase resource depletion and environmental degradation, regard human population growth as a scourge to human and nonhuman natural elements alike. However, these views are countered by demographic optimists like Julian Simon, who wrote, “The ultimate resource is people – skilled, spirited, and hopeful people who will exert their wills and imaginations for their own benefits, and so, inevitably, for the benefit of us all” (Cited in Pojman 2008: 382). Though I’m not an adherent of Malthus, I disagree with anti-Malthusians, like Simon, Bill McKibben and Ester Boserup, as well. My views align more closely with those of Clark Wolf, who wrote, “population growth is one of the most important environmental problems of our time. Unless human population growth can be slowed and stabilized, it is

unlikely that efforts to reduce the rate of environmental destruction can be successful” (ibid. 439-40). At first this sounds truly Malthusian, but Wolf extricates himself from that position by arguing for what could be construed as a weak anthropocentric solution. In Wolf’s opinion, the solution to demographic problems and the environmental issues associated with them lies in human development and social justice. He believes these goals to be crucial for the preservation of not only humans, but also nonhuman natural systems, and in so doing aligns himself with neither strict ecocentrists nor strong anthropocentrists but rather a form of environmental pragmatism. Many debates over GMCs pit ecosystemic concerns against human wellbeing without considering the alternative, middle ground. My main contention with the technocentric idea that human ingenuity will develop technological methods to accommodate rising human populations is that I do not believe it is as likely as its alternative. I find it improbable, given the current state of the world, that an increase in the human population would benefit either humans or the rest of the natural world. I’m certainly not arguing for eugenics or genocide, but I think it is necessary to acknowledge the troubles associated with human population growth. As with any other species, overpopulation causes ecological imbalances. Elk in Yellowstone National Park provide a great example of this.

From the 1960s to the 1990s, elk populations in Yellowstone tripled in size. By the late 1980s, biologists had become increasingly wary of the effects of this growing population. The elk changed ecosystems along the banks of rivers and streams as thousands of them descended on these areas to drink. This behavior destroyed stream bank vegetation, which, in turn, negatively affected beavers and other river dwelling creatures. With over 56,000 elk in the park by the early 1990s, Bill Lowry writes, “the area around Yellowstone is overcrowded with big game and could use a predator like the wolf. Three years ago, one of the more pathetic sights

amid the grandeur of Yellowstone was that of hundreds of starving, dazed elk stumbling around towns on the border of the park, scrounging for food” (Lowry 2009: 37). It soon became clear that elk herds needed culling for the greater good of many species in the Yellowstone ecosystem. The solution to this population problem was the reintroduction of wolves to the park in 1995. These predators helped cull elk populations while also forcing surviving herds to heighten their alertness and to descend upon riverbeds less frequently. With these ecological changes came beneficial population rebound effects for such species as beavers, aspen trees, foxes and hawks (Lowry 2009). The success of wolves in Yellowstone proved pivotal to the elk overpopulation problem, but what is the solution to human population problems? Currently our species has no natural predators and our ability to populate any biome on the planet coupled with the potential rise in food stocks from GMC cultivation leaves humans with a major potential for population growth in the coming decades. As stated previously, human overpopulation, like that of any other species in an ecosystem, has potentially devastating consequences to the rest of the natural world. As such, I believe this issue carries great significance and we should be wary of possible effects GMCs could have in exacerbating this problem.

To shift our focus from the hypothetical to the actual, let us now examine a case study on the effects of GM crop cultivation. The following sections will demonstrate the consequences of genetically modified soybean cultivation in Brazil, examining the inadequacies of both deep ecological as well as strong anthropocentric thought and maintaining the advantages presented by an environmentally pragmatic approach.

SECTION X: GM SOY

Although genetically modified strands of soybeans only arrived in Brazil in the past decade, Brazil is no stranger to this crop. Large-scale cultivation of the legume began in the late 1960s for soybean vegetable oil, but expanded rapidly in the early 1970s, as international demand for soy protein meal increased. Christine M. Du Bois explains, “Expansion was further stimulated by President Richard Nixon’s decision in 1973 to restrict soy exports from the United States. This greatly upset the Japanese, who were quite dependent on U.S. soybeans and therefore turned to Brazil for soy” (2008: 236). This event, and the ensuing PROCEDER (Japanese-Brazilian Cooperation Program for Cerrado Development), launched Brazil’s soybean production in the fertile and biodiverse savannahs of Brazil in the Cerrado region. Japanese funding and Brazilian willingness to embrace soybeans catapulted Brazil to the world’s largest exporter of soy meal in the 1970s. Brazilian soybean production has increased ever since, from 1.5 million metric tons produced in 1970 to 57 million metric tons produced in 2008 (USDA/FAS 2009). However, this explosion in soybean cultivation and production palls in comparison with how fast the nation has adopted genetically modified forms of this crop.

Genetically modified soybeans made their world debut in 1996 when the US biotech company, Monsanto, began marketing them under the name Roundup Ready Soybeans. In 1996, none of Brazil’s soybeans were genetically modified, and this trend continued until 2000. That year, the USDA reported that 0.21 percent of Brazil’s soybean acreage was sown with RR soybeans. These GM varieties were introduced illegally from Argentina and by 2006 over 48 percent of hectares sown with soybeans in Brazil were sown with RR soybeans (USDA 2006). The rate of expansion of RR soybean cultivation in Brazil is truly staggering, and is surpassed only by the expansion of hectares sown with RR in Argentina, which climbed from 5.55 percent

in 1996 to 99.16 percent in 2006 (USDA 2009). Yet unlike Argentina's capacity for soybean cultivation, which has basically reached its limit, Du Bois states, "Brazil has the technical potential to increase its soybean potential nearly tenfold" (2008: 238). In order to better grasp this seemingly impossible potential for growth, a better understanding of Brazil's geography is essential.

As Matthey, Fabiosa, and Fuller note: "Historically, crop production in Brazil was concentrated in the southeastern states of Sao Paulo, Parana, Santa Catarina, and Rio Grande do Sul" (2004: 2). Agriculture in these states is facilitated by fertile soils, easy access to water and infrastructure that facilitates transportation of produce by trucks to major cities and export centers. However, as population increased and these areas began to develop, land became expensive and crowded. Consequently, many farmers began to buy cheap land in the Center-West region comprised of the states of Mato Grosso do Sul and Mato Grosso, also known as the Cerrado region. Although the soils in the Center-West are acidic and not nearly as fertile as those of the southeastern states, the land was flat, expansive and well-suited to cultivation of crops that increase soil productivity when grown together, such as wheat and soybeans. Matthey, Fabiosa, and Fuller explain:

Soybean production expanded dramatically in the Center-West in the early 1980s in response to three important factors: high soybean prices, the development of soil conditioning techniques that significantly enhanced the productivity of the region, and the development of soybean varieties that were suitable for the tropical climate. (2004: 2).

Brazil is also the fifth largest country by area in the world, with a land area of 8,456,510 sq km (CIA 2009); however, much of this area is covered by the Amazon Rainforest, one of the most

biologically diverse regions on the planet. Additionally, Du Bois notes, Brazilian savannahs in the Cerrado region are among the most species-diverse biomes in the world (2008: 238). Nevertheless, soybean cultivation has become a powerful ally to the industrialization and development of Brazil. Roundup Ready soy plays a major role in the expansion of soybean cultivation and industrial growth, which are regarded as successes by anthropocentrists, whose views are further explored below.

A. STRONG ANTHROPOCENTRIC PERSPECTIVE

Examining GM soy in Brazil from a strong anthropocentric perspective demonstrates the anthropocentric underpinnings of genetically engineered agriculture. Agriculture lies at the heart of human society. Its primary purpose is to feed and maintain expanding human populations, and its practices often follow an anthropocentric ethic that subjects nonhuman nature to human interests. Strong anthropocentrists would perceive the ability to cultivate soybeans in an area where they were previously unable to flourish as advantage allowing for greater cultivation and subsequent economic gains for Brazil. The chart below illustrates the increase in soy production in Brazil in the past two decades as the nation responds to the high international demand and high market value of these crops.

Year:	1999	2000	2001	2002	2003	2004	2005	2006
% RR soy	0.00	0.20	2.01	4.67	13.57	20.36	36.00	48.00

(USDA 2010)

These data give strong anthropocentrists concrete evidence of economic growth, which may outweigh deep ecological concerns about potential, yet undocumented, ecosystem catastrophes. Still, many potential issues with a strong anthropocentric argument for GM soy remain unresolved.

With the controversy surrounding GMCs and the rapid rate of human population growth, a few questions need to be addressed. Will bioengineering be able to produce cheap food needed to satisfy the needs of a growing population? And if it does, how will we overcome shortages in the supply of drinkable water and energy sources? Will the biosphere be able to absorb the effects of the new technologies that are effecting dramatic changes in its constituents? Will governments be able to introduce and enforce the necessary changes? Will politicians even be willing to consider these issues over pressing issues such as economic, social or military concerns? These are the type of issues raised by deep ecologists when addressing the current anthropocentric approach to GMCs, but this group of radical environmentalists has issues of its own.

B. DEEP ECOLOGICAL PERSPECTIVE

The majority of deep ecologists do not deny the importance of agriculture to human survival; nevertheless, they do reject modern agricultural practices, especially GMCs, for a variety of reasons. First, deep ecologists worry expanding monocultures of genetically modified soy will lead to deforestation, water contamination and soil depletion. In Brazil, deep ecologists have become increasingly concerned with the rapid disappearance of the Amazon rainforest, and with good reason. Since 1990, Brazil has lost 8.1% of its forest cover due to land clearing for pastures and, more recently, the cultivation of genetically modified soybeans (Butler 2010). Moreover, deep ecologists reject the expansion in infrastructure, such as roads, highways, warehouses, and ports, that accompany soybean expansion. For example, Cargill recently built a port in Santarém, a town on the Amazon River, that the company hopes will be able to handle about 800,000 tons of soybean exports in 2008 (Du Bois 2008). The socioeconomic gains driving the cultivation of soy monocultures also trouble deep ecologists, because they seem to justify

agribusinesses' initiatives that may harm ecological health. However, one of the biggest concerns deep ecologists have with GMCs is their ability to support larger human populations. If mankind misuses its technology not only to promote dysgenic reproduction, but also to allow our own reproductive capacity to overuse nonhuman natural resources, humans may destroy not only our own species, but also most of the other higher species with which we currently shares its strictly limited global habitat. Hence, deep ecologists demand a large population decrease worldwide, but they do not endorse any concrete, logical means for achieving this goal. Though I agree in theory with their qualms about GMCs, I believe a more environmentally pragmatic approach is necessary to attain a middle ground between the two groups and produce effective environmental policy.

C. WEAK ANTHROPOCENTRIC PERSPECTIVE

I believe weak anthropocentrism provides the most logical method of dealing with GMCs, through compromises. An example of such was seen in 2006 when all the major soy producers in Brazil – Cargill, Archer Daniels Midland, Bunge, Dreyfus, and Amaggi – pledged not to buy soybeans cultivated in newly deforested areas in response to ecocentric concerns (Du Bois 2008:245). This measure showed a willingness to cooperate on the part of major multinational agribusinesses. This approach is environmentally pragmatic, because it requires both strong anthropocentrists and deep ecologists to work in unison to achieve progress. This philosophy would embrace researching GMCs to ascertain the costs and benefits of their implementation in nonhuman environmental systems and the effects of their consumption by both humans and nonhumans, primarily livestock. It would endorse extensive analysis of GMCs before allowing their cultivation. Environmental pragmatism would not reject GM crops outright, like deep ecologists do, but would rather require a fuller understanding of all potential

impacts of these cultivars before it would allow their dissemination. As shown in an earlier section, environmental pragmatism seeks to reconcile deep ecological and strong anthropocentric philosophies without condoning either as totally right or condemning either as complete wrong. When this approach is applied to GMCs, I think it would adopt a deep ecological restrictiveness to GMC cultivation and expansion in Brazil. However, I also believe it would allow GM soy cultivation to continue in Brazil, albeit in a confined manner, in accordance with strong anthropocentrism. The rationale behind this allowance stems from the data supporting its economic benefits to humans as well as the lack of concrete data bolstering deep ecological claims of nonhuman environmental devastation. Of course, the exercise of weak anthropocentrism in making any policy requires an apparently elusive factor, cooperation between divergent environmental groups. Environmental pragmatism would solve this issue by showing strong anthropocentrists how necessary preserving biodiversity in Brazil is to maintaining the ecological health of nonhuman natural systems while also demonstrating to deep ecologists how important a cooperative relationship with anthropocentric agribusinesses is to protecting nonhuman ecosystems. Having achieved this middle ground, I think both groups would pursue more moderate policymaking allowing the limited cultivation of GM soy in Brazil while protecting the precious biodiversity of the Amazon rainforest and Cerrado region.

CONCLUSION:

As shown, strong anthropocentrists and deep ecologists rely on a common element for achieving their goals, the ecological health of natural systems. Strong anthropocentrists should acknowledge this as necessary for the wellbeing of present and future generations of humans (though they rarely do), and deep ecologists obviously embrace ecological health as their

primary goal. In order for either group to achieve its aims, they must first realize this common, fundamental necessity and stand ready to cooperate with the other group to achieve environmental progress. Weak anthropocentrism espouses this collaboration as its fundamental goal. Bryan Norton and other environmentally pragmatic thinkers realized that enlightened forms of both anthropocentrism and deep ecology would embrace the same policymaking decisions. Anthropocentric motives for protecting nature are just as good as deep ecological reasons; what is controversial is the view that either side provides the *only* good reasons. Why not argue for environmental protection using reasons both nonanthropocentric and anthropocentric thinkers could accept? Nonhuman nature should be regarded neither as a mere means to human ends, nor a morally equivalent counterpart to humans. Instead, humans must acknowledge the intrinsic value of nonhuman nature while also understanding humans and the natural world are inseparable, because humans are a unique part of the greater biosphere. Only when these goals have been achieved will humans be able to create and execute policies promoting human welfare without damaging nonhuman nature. With this environmentally responsible mindset environmentalism may evolve from a philosophically guided social movement to a way of life.

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