ABSTRACT

SUSTAINABLE AGRICULTURE: PRAGMATISM, DISTINCTIONS ON ARTIFACTS AND THE ROLE OF THE LAND ETHIC

This thesis will explore the ethical dimensions of global agriculture from the productionist paradigm to the land ethic in the context of the sustainable agriculture promoted in the fair trade, shade grown, and organic coffee movements. Much of the sustainable development debate in the environmental ethics literature has centered on justifications (from anthropocentric and nonanthropocentric worldviews) for preserving nature. Since agriculture is an artifact of human sedentary civilization, traditional nonanthropocentric arguments do not suffice because of the tendency to focus exclusively on natural systems. Building on the work of Katz's "Pragmatic Re-Consideration" and Light's "methodological pragmatism," the role of anthropocentric and nonanthropocentric worldviews in the ethical justifications for policy is considered. After developing a pragmatic reconsideration of worldviews, it will be argued that a sustainable agriculture with regard to ecosystem preservation can be achieved by expanding the biotic community referenced in Leopold's Land Ethic to include agriculture or by accepting multiple overlapping arguments as does methodological pragmatism. Ecologists agree that biological corridors are essential to proper functioning and the carrying capacity of migratory species. From a policy perspective, sustainable agriculture means not only the preservation of natural systems, but also the integration of surrounding artifactual systems to support those natural systems.

SUSTAINABLE AGRICULTURE: PRAGMATISM, DISTINCTIONS ON ARTIFACTS AND THE ROLE OF THE LAND ETHIC

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DEDICATION

To my family, friends, and those who are both…

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CHAPTER 1

INTRODUCTION

Human civilization depends on production, that is, the intentional transformation of the material world into artifacts. Agricultural systems are an essential element to modern society's transformation of nature; it makes sedentary civilization possible. Agricultural systems are also a significant source of externalities, both physical (aquifer contamination, soil erosion, genetic pollution, etc.) and social (distribution of resources, access to credit, farm-worker health, etc.). It is these consequences that this thesis seeks to address by qualifying its ethical dimensions, implicating past policy foundations, and developing an ethic of agriculture.

Much of the discussion in policy circles has dealt with how to confront the global change that has become evident in the realms of climate and biodiversity as a result of modernization. It has been suggested (Tillman, 1999), that agriculture will be a major driver of global change in the next fifty years, rivaling the impact of the greenhouse effect (and in some cases being intimately linked such as in the context of carbon sequestration). Since human agriculture has such a profound impact on the planet's ecosystems and biodiversity, significant attention must be given to the consequences of liberalizing trade, modernizing the rural sector, and developing export economies based on foreign direct investment (FDI).

Agriculture and trade have followed parallel paths in human history, expanding temporally with the reaches of transportation. In this context, it is

suggested that globalization is nothing new. However, new trends in global trade would suggest that there are several differences in more recent years that would qualify it as being quite different. The more recent form of global trade has taken a different form, often referred to as neo-liberal globalization. It espouses the ideology that international integration coupled with free market liberalism and low levels of government interference is the best way to deliver growth and raise living standards (Harvey, 2000). Criticism of this ideology's lack of concern for environmental or social values is typically described as either an incidental result of modernity (Habermas, 1973) or a failure of the welfare state (Sen, 2000).

Neo-liberal globalization is changing the scope and intensity of the global agricultural system as it temporally and spatially compresses the experiences of capitalist production. Coffee, second to oil as the most valuable exported legal commodity on Earth, has experienced a shift in cultivation practices away from traditional "shade grown" as a result of globally competitive markets and international institutional practices. Since the early 1970s, coffee corporations and international investment institutions have spent hundreds of millions of dollars technifying Central American coffee farms by having farmer's make the transition from "shade grown" varieties to technology intensive "full sun" varieties. At the time of this writing, global competition, instability in the commodity market, and institutional lending policy have been implicated as major drivers in forcing coffee producer prices to their lowest point ever recorded. The present price of $0.425/lb. (January 2002) is significantly lower than a high of $3.05 in May 1997 (DePalma,

2001). The industry is truly in a mode of crisis as farmers in countries like Nicaragua, Honduras, and El Salvador are threatened with the prospects of losing their land.

The end result is that coffee is inexpensive to consumers ($2 per cup), while rural farmers (earning $0.425 per pound) and laborers (earning $2 per day) go impoverished, as does the integrity of Earth's ecosystems. Unfortunately, many write off this devolution to an environmentally destructive practice coupled with diminished social standards simply as a common side effect of globalization. The prescribed remedy is seen as an economic or technical one. The farm is required to become more efficient (by means of technification and conglomeration) and in this case, the prognosis for small farms to compete in unstable commodity markets is dismal at best. It is the large international food companies, able to absorb losses in one sector, say coffee, and make gains in another, say tobacco or cocoa, that can most successfully compete. This global competitive structure has tilted the playing field in the favor of large multinational corporations who are able to diversify their products, and "play the game" of unstable commodity prices. Small farmers simply cannot afford that risk. The implications for ecosystem integrity and stability are profound given that accumulation in agriculture now requires highly technified, capital intensive, often monoculture farms.

The critics of the neo-liberal globalization project have engaged in a fight to discredit global markets and institutions for their failure to incorporate environmental and social values and standards in their policies and procedures. They point out that while the institutionalization of rules governing economic utility and market competitiveness has taken place, the institutionalization of binding rules governing

environmental and social values has not. Critics suggest that this runs contrary to the idea that sustainable development is supposed to achieve a balance between economy, society, and environment.

The events that unfolded in Seattle in November 1999, and subsequently at international financial conferences around the world from Quebec City to Prague, points to the degree of polarization amongst environmental/social groups and the dominant economic hegemony. As one would expect, the discourses are rich in ideological rhetoric. These protests have resulted in increased attention focused on the inequalities that globalization has perpetuated. Like the protests against the World Bank in the late 1980s, that led to a moderate reform of some of the Bank's policies and practices (Rich, 1994), anti-globalization protests have opened up political space to challenge the policies of international institutions. These challenges have focused on the destructive ways industrial society, accelerated by neo-liberal globalization, has affected the planet (ecologically) and its inhabitants (socially).

The Brundtland Commission was formed by the United Nations to deal with the "side effects" of industrial society. In the late 80s, it decided that the most plausible ways to confront these effects was to follow a path towards what they termed "sustainable development." The root of the environmental crisis was poverty, and accordingly, the alleviation of poverty was seen as an essential element to international development. The Brundtland Commission attributed poverty to an uneven development where uneven access to resources results from a failure to achieve economic development. Sustainable development implies that economic and natural resources have to be developed in a sustainable manner that would allow them

to be available to future generations. This pronouncement has resolved very little to date, as the term itself seems paradoxical as the well intentioned framers never set a definition to what it actually means or from whose voice and values it derives. Thus, the challenge of a discourse on sustainable development remains largely unresolved.

In the context of development and globalization, various claims on the discourse of sustainability have focused on empirical notions. These empirical studies often evaluate non-quantifiable terms such as standard of living, and ecological health or quantifiable ones like GDP, emissions, etc. Empirical studies have made significant contributions to understanding the state of nature and society. However, they often lack the political and legal strength to move into policy. For example, there are many sources of data available on the topic of global climate change, but powerful international actors (like the oil, gas, and automobile industries) are able to shape the extent to which science occupies the realm of policy.

Empirical work is short on normative questions and answers. For example, questions regarding the spread of invasive species can be hypothesized. From that, it can be demonstrated that invasive species A is taking over the niche of endemic species B, which may contribute to the extinction of endemic species B. What empirical work cannot reveal is whether this is desirable or not. Questions of desirability are reduced to questions of values. In the context of global climate change, some would suggest that global climate change is desirable (increased agricultural productivity resulting from warmer climates at higher latitudes). Some would suggest otherwise (marginalized peoples living in coastal flood plains). Returning to the ecological example, perhaps it is desirable to allow endemic species

B to go extinct (too costly to manage), perhaps not (because it has rights). This is where questions of ethics arise. While empirical studies reveal much about the world, it often becomes clear that in the context of contributing to policy, decisions are reduced to questions of value.

This value judgement inherent in how one views sustainable development is often overlooked. The term has become the most abused in the environmental literature's short history. Before it can be determined whether or not a practice or a policy is sustainable, the normative exercise of what constitutes sustainable practice must occur. Trying to set these parameters with regard to agriculture, Reganold, *et al.* (2001) writes

> *To be sustainable, a farm must produce adequate yields of high quality, be profitable, protect the environment, conserve resources and be socially responsible in the long term.*

What is it that is being made sustainable? Is it the ecological or social attributes? Or is it both? To whom are duties owed? Is it the farmers? Are the ecosystems of moral considerability? Is sustainable development a goal? Is sustainable development an aspiration that in the future (sooner rather than later) it is hoped that human civilization will aspire to? Or is sustainable development a discursive process in which this substantive content will always be contested through discourse as the social and the ecological dynamics shift? Clearly, before any empirical analysis can take place, the parameters defining sustainable development

must be discussed. It must be clear exactly who is deemed morally considerable and to what extent they are morally significant. If moral consideration is extended beyond the human to nonhuman nature, what is the rationale for such an inquiry? It is in this context, that environmental ethics can yield important insights that are often ignored or overlooked.

The claims of how the natural and artifactual systems are morally considerable are a pillar of debate in the literature of environmental ethicists. It can be seen as a part of a framework for conceptualizing and actualizing sustainable development. The insights of environmental philosophers becomes especially important as policies become globalized and alternatives to the current paradigms employed by various global institutions are considered with the opening up political space created by social movements. How are production and preservation imperatives balanced? Can they be integrated? This thesis will explore the framework for a global eco-agricultural ethic by first exploring how the ethical justifications for such an ethic would look.

1.1 Why an Ethical Framework?

This thesis will employ the semantics of environmental ethics. An ethical inquiry helps establish the philosophical reasoning behind the justifications for policy imperatives. It is in this way, that environmental ethics is useful as it allows for a rigorous examination of the motives and moral justifications that drive policy, in particular, the ways in which the contemporary ecological crisis is dealt with in the public policy realm.

It has been suggested, that perhaps the main problem in dealing with ecological issues in the public policy realm is the framework under which the problem is considered (Redclift, 1987). Contemporary environmental managers for the most part suggest that ecological problems are technical ones. In this sense, science plays the central role in defining and seeking solutions to environmental problems. This frame of analysis ignores the role of political and hence ethical issues in proposing solutions to the ecological crisis.

In the search for solutions to environmental problems, the usefulness of an ethical framework is often overlooked. In the broadest sense, ethics are used to explain the nature of moral right and wrong. With environmental problems, empirical data can reveal many things; Are significant amounts of greenhouse gases releasing by mechanized tilling? How will global climate change affect competition between the invasive norway maple and the native sugar maple? At what dosage threshold will DDT likely cause cancer? All of these questions can be answered with empirical evidence. However, empiricism cannot reveal whether something is right or wrong, good or bad, desirable or undesirable.

These normative questions have been relegated to the inquiries of ethical theory. Ethical discourse has played a foundational role in the formulation of codes of conduct in legal, political and religious institutions as well as providing an arena of struggle for social movements. In environmental philosophy, competing ethical claims come from the natural law and social contact traditions.

Natural law evokes the capacity for reason as being the definitive basis of a distinctively human ethical standing. It was in this tradition that Locke (1690) shifted

the notion of 'common good' to 'individual good' elevating the "moral significance of the separateness of person" (Buckle, 1991). In this sense, certain bearers of rights (depending on what time in history this could mean all property owning males, all males, or corporations) have certain moral standing and are owed certain forms of treatment (VanDeVeer & Pierce, 1998).

Social contract theories are based on the idea that issues of justice depend on the contractual agreement members of society reach. These resolutions rest on particular social institutions of contract (market) and rights (law) as the basis for establishing rational autonomy as the precondition of ethical agency. Rational beings are able to reflect upon options and principles, and autonomously react in a way which duty demands. Much of the influence in this respect is due to the work of Immanuel Kant and his supreme principle of morality "the Categorical Imperative" (VanDeVeer & Pierce, 1998). In this version, a person should never be treated as a mere means. A second version of the Categorical Imperative, which Kant deemed equivalent, suggests that "one should act only on those maxims of one's actions that one can, as a rational being, will to be (or endorse as) a universal law, that is, obeyed by all moral agents" (ibid.). Thus, from the Categorical Imperative, the moral value of an act cannot be determined by assessing its consequences. This idea stands in opposition to the consequentialism of utilitarianism that this thesis will address later in the text.

Ethical claims are important because they manifest themselves in legal and policy frameworks. There has been dispute surrounding the legal encoding of the social meanings of 'person' and 'human' in law. For example in *Santa Clara County v.*

Southern Pacific Railroad (1886), it was determined that a corporation was deemed a 'person' under the 14th amendment, a constitutional amendment initially intended to provide rights to slaves recently freed in the post-Civil War era (Stone, 1974). Environmentalists have tried to play a similar card in the courts. However, extending the rights of 'persons' to trees and other natural entities has not been received well by the justices who have the authority to grant such rights in the United States (Harte and Socolow, 1976).

Ethical claims also play a large part in other realms of public policy as well. The 1973 Endangered Species Act in the United States recognizes that to some extent there are duties to preventing certain 'endangered' species of animals from becoming extinct. A major criticism of this approach however, is that though individual species are given a right to exist, no considerability is given to the biotic community in which this species is found. Thus, legal protection is granted to the species disregarding the species habitat.

So it is clear that environmental ethics is not solely relegated to intellectual and academic debates. It is part of a larger discussion that lends itself to issues like law, social movements, and consumer ethics. The various treatments of the biotic community, natural systems, and artifacts in the environmental ethics literature will be addressed in an effort to explore the various frameworks in which environmental ethics has developed. Much of the ethics literature examines the justifications for how humans, as moral agents, should respond to the ecological crisis. This thesis presumes that there does exist an ecological crisis. Claims to the contrary will be outside the realm of the discourse employed.

Since its inception as a fashionable response in policy circles, the ethics literature has looked at the notion of sustainable development. It is clear from these analyses, that sustainable development has become a slippery term. The widespread use of sustainable development has left the operational definition vague and difficult to employ. Different outcomes result from the various ways the term is defined and approached. If sustainable development is a dutiful response to the ecological crisis, what are the foundations in which such an ethic is grounded? How sustainable development is defined shapes and structures the frame of analysis. What questions get asked? What approaches are used? What solutions are offered? This has led ethicists and philosophers to examine the differences that arise from policies grounded in anthropocentrism and nonanthropocentrism, the two central notions of obligation in environmental ethics.

In the context of biodiversity and global ecosystem health, much of the environmental ethics literature on the topic of sustainability has focused on the preservation of natural systems. Justifications for the preservation of natural systems take the form of either anthropocentric or nonanthropocentric arguments. In the former, natural systems are preserved for their utility to humans, either in the present or to future generations, in the latter they are preserved for their own intrinsic value.

Anthropocentric justifications put moral consideration of humans needs and wants above all else and give no thought to natural entities except as they relate to human interests (Sagoff, 1988; Hargrove, 1989; Hardin, 1968, Norton, 1991). Human interests are the center of value. For example, the preservation of a mountain wilderness may be justified by how it will protect an area's drinking water, offering a

benefit to human society. A tropical rainforest may be protected under the supposition that it may potentially harbor the genetic resources for a human use such as a new medicine, another benefit to human society. A crusade for organic agriculture may emphasize how pesticides affect human health, again to the benefit to human society. If there are no benefits to human society, the action or policy cannot be justified according to anthropocentrists.

Nonanthropocentrism seeks not to belittle these arguments; moreover, it seeks to fit them into a larger frame that holistically incorporates the natural community (Rolston III, 1988; Callicott, 1989; Katz, 1997). It sees logical failures in justifying actions based upon how they benefit human society. If the satisfaction of human interests is the goal of policy, the preservation of natural processes is not necessarily required (Krieger, 1973). It overlooks the possibility of adequate substitutes (Katz, 1997).

Justifications based on nonanthropocentrism need not identify how a policy would benefit humans. Preservation of a mountain wilderness is justified by how it would benefit the ecological integrity of the mountain, from the wildlife to the microbes, not just the benefits to humans. Nonanthropocentrism ascribes an intrinsic value to natural or biotic entities, giving them worth unto themselves.

More recently, the ethics literature has embarked on a discussion about the role of the pragmatic method in environmental policy. By asking what practical differences arise from policies grounded in either of the two theoretical notions, it becomes clear whether or not the debate merits further discussion. Andrew Light distinguishes between two types of environmental pragmatism (Light, 1996). The

first, philosophical pragmatism, lends itself to the substantive content of pragmatic thought and is thoroughly anthropocentric. In the second, one adopts the pragmatic method. This is referred to as methodological pragmatism (in earlier papers this was referred to in the literature as metaphilosophical pragmatism). Methodological pragmatism "provides a litmus test against which competing modes of evaluation can be weighed" (Light, 2000).

In a paper in the journal *Environmental Ethics*, Eric Katz employs methodological pragmatism in a policy situation regarding the Army Corps of Engineers' program of beach replenishment on coastal barrier islands. The argument follows that the perspectives (nonanthropocentrism or anthropocentrism) from which moral justifications emanate does affect what policy is implemented contrary to earlier suggestions (Norton, 1991). The anthropocentric argument justifies a policy of beach replenishment on the economic and utilitarian grounds. The nonanthropocentric argument in this case, would see the barrier island naturally erode, restoring 'natural' shoreline dynamics, without concern for human economic or property interests.

However, there is another important dualism aside from anthropocentrism/nonanthropocentrism. The distinction between artifactual and natural systems complicates the analysis. Natural systems in this context lack intrinsic function (Brennan, 1984). Artifactual systems are created for use in human social and cultural contexts (Katz, 1992) and serve solely as human ends. In this case, the altered shoreline, with its jetties, bulkheads, dredged harbors, and artificially placed sand, serves as the artifactual system. Once it becomes recognized that it is an

artifactual system under question, Katz argues that nonanthropocentric arguments become irrelevant.

Katz concludes that methodological pragmatism "suggests that anthropocentrism can make a positive contribution to the evaluation and justification of environmental policy in situations dealing with largely artifactual systems" (Katz, 1999). However, in situations relating to the protection of natural system and wilderness areas, there is a clear difference between nonanthropocentrism and anthropocentrism. In those situations, Katz remains "committed (mercilessly) to nonanthropocentrism" (ibid.).

Thus, an interesting question arises: What about artifactual systems such as agriculture? These systems are intimately tied to the health of natural systems and wildernesses, albeit indirectly. Ecosystems are highly dynamic, with some very mobile parts. In response to the rapid ecological fragmentation resulting from rapid development, ecologists have called for the establishment of biological corridors to protect some of the transboundary components of ecosystems (Vandermeer, 1997). The integration of sustainable agricultural practices is a central pillar to biological corridors along with wilderness areas and parks. This view sees fragmented habitat as a matrix and is rooted in concepts from island biogeography (Bierregaard *et al.*, 1992). The activities that occur in the matrix significantly influence the "effective isolation" of the fragmented habitat (Ricketts, 2001). This makes studying the practices in the matrix essential to a successful policy to preserve the integrity of natural ecosystems according to ecologists (Saunders, 1991). If this moral foundation to serve natural systems (by setting up biological corridors to protect species from the

effects of the matrix) is to be included in the holistic version of an environmental ethic, the anthropocentric justifications still fail. The anthropocentric justifications for the preservation of the integrity of ecosystems (by setting up corridors) are no different even though it is spatially separate from the natural system. Does a similar review employing the pragmatic method, i.e. Katz's *Environmental Ethics* paper, follow with the same result? That is, are nonanthropocentric arguments in artifactual systems always irrelevant?

Since agriculture is purely artifactual, will traditional arguments, premised on the dualism that distinguishes artifacts from natural systems still work? In these arguments, artifacts lie outside the realm of subjects with a 'natural' intrinsic value such as wilderness areas and wildlife refuges. To find compatibility within a nonanthropocentric framework, it may be necessary to award intrinsic value to artifacts such as biological corridors, which are vital to the survival of certain migratory species.

It may be that arguments that distinguish natural and artifactual systems, in fact, are counter-productive to sustainable development. If agricultural land is regarded as simply an anthropocentric artifact, conventional practices may be justified in the name of preserving natural systems because an intensive production allows more wilderness area available to be preserved. Taken at face value, this justification for a more intensive production sounds outlandish. Does it therefore, serve as a straw man? It does not. It would be nice to assume that there are no (influential) policy makers that are proposing this. Unfortunately, there are. Take for example Dennis Avery, a major agricultural policy maker in the Reagan

administration and currently the director of the Hudson Institute's Center for Global Food Issues, he has suggested that organic agriculture is an enemy to biodiversity and natural systems (Avery, 1996; Avery, 1997). He suggests (unsupported by sound evidence), that the scale on which sustainable agriculture (as defined by the organic agriculture movement) would have to be reproduced, would consume most of the planet's natural systems.

This justification ignores several aspects of what an intensive agriculture means to the achievement of sustainability, such as energy use, carbon sequestration, and soil degradation. It instead focuses entirely on the spatial maximization of natural areas. These ideas will be developed more thoroughly in later sections. This thesis will take at face value (reluctantly) the suggestion made by Avery and seek to understand the role of natural versus artifactual justifications in determining the extent to which his suggestion, that sustainable farming is an enemy to nature, is based.

Subsequently, this thesis will investigate the idea that the best way to ward off the ecological crisis is to thoroughly integrate agriculture into plans to protect biodiversity. Given the extensive areas used in agriculture, their treatment will have profound implication on the natural systems they surround. In other words, though they are not natural systems, treating agricultural systems as members of the biotic community by ascribing them intrinsic value makes them an extension of natural systems as biological corridors and buffers.

This thesis will also suggest that to achieve the goals of sustainable development in agriculture it is may be useful to evaluate policies via methodological

pragmatism or justify normative nonanthropocentric arguments with a holistic approach rooted in a land ethic that includes agriculture. Agriculture needs to be treated as a process within the biotic community, not as a pure artifactual system. Arguments ascribing intrinsic value to the biotic community rooted in the land ethic have been made for natural systems (Callicott, 1989; Rolston, III, 1988; Katz, 1997). Here it will be extended to include biological artifacts created through an integrated agriculture that seeks to balance social and ecological imperatives.

1.2 The Conventional Agriculture Ethic

The early to mid twentieth century set the stage for much of the current practice in agriculture. Research at land grant universities and agricultural research stations feeding into the chemical industry led to a variety of different synthetic and petroleum based agricultural inputs. This model promulgated fertilizer responsive, hybrid seed varieties developed in laboratories and integrated farm management practices based on biocides and modern farm machinery (Sonnenfeld, 1992). The 'green revolution' in agricultural technology increased the productivity of land significantly. The intensive production practices and the institutional supports that contributed to the modernization project have been justified by cheap food policies. Cheap food policies enable the lower classes of society to spend earnings on other commodities. Therefore, cheap food is seen as a dominant paradigm in development models that have been promoted since the institutionalization of development through the Bretton Woods system.

The use of pesticides, herbicides, and fertilizers, however, have exacted a tremendous long term effect on the soil, contaminated air and water sources in both agro-chemical application and production areas, and severely impacted wildlife and biodiversity. These industrially produced chemicals can be generalized into two categories, persistent and non-persistent. The persistent classes of chemical compounds used in agriculture, generally chlorinated hydrocarbons, include DDT, BHC, Toxaphene, aldrin, dieldrin, endrin, chlordane, and lindane. Persistent compounds have been implicated in a number of studies for their long term effects on human health such as liver disease and cancer (Hoar, 1986) as well as their contribution to the reproductive failures of certain species of birds and mammals (Carson, 1962).

The class of non-persistent agricultural chemicals generally consists of organophosphates with a few exceptions including some carbamates, and a few chlorinated hydrocarbons. These chemical compounds have much shorter half-lives in the sense that they break down much more readily. The class of compounds includes parathion, methamidophos, guthion, malathion, aldicarb, paraquat, and endosulfan. While the long term effects are less worrisome, they are typically more acutely toxic to humans and animals (Ragsdale & Kuhr, 1987).

Contact between these chemical compounds, humans, and nature occurs in varying degrees from intensive in chemical production and chemical application to acute in the consumption of treated foods. The conventional agriculture ethic accepts these consequences of the green revolution. The *sin qua non* of the green revolution

is cheap food which is justified by citing improvements in the quality of life for humans.

To reach this conclusion, the conventional agriculture ethic assumes that the benefits derived from conventional agriculture far outweigh the risks. Thompson (1994) refers to this common perception as the productionist paradigm. It takes on the assumption that production enhancing agricultural technologies contributes utility to society. Thus, the conventional agricultural ethic, by accepting only moral duties to humans, is unquestionably anthropocentric.

Thompson notes that this uncritical acceptance of the productionist paradigm is due to the influence of two discredited dogmas: positivist science and naïve economic utilitarianism. Positivist science asserts that science is value neutral and outside the realm of ethical inquiry. All questions are empirical to the positivist (true or false) and all moral statements bear no fact; they have no place in science. Therefore, ethics has become a taboo subject for scientists who feel it ethically wrong to include statements about normative matters in their "scientific" work[1]. Thus, little questioning of the productionist paradigm from the scientific community was considered "legitimate."

Naïve economic utilitarianism subscribes to the belief that all methods to increase food production are inherently acceptable (Thompson, p. 60). It is based on the utilitarian philosophy as formulated by Jeremy Bentham, John Stuart Mill, and

[1] Paul Thompson points out that "the statement that science is and must be value-free is amusingly self-contradictory, since it stipulates a norm for scientists at the same time that it denies the validity of norms." (p. 61)

Henry Sidgwick, which requires careful deliberation on the ends that humans seek[2]. From a policy perspective, according to utilitarianism, consideration is given as to whether a policy allows or frustrates the satisfaction of existing human preferences. The debate over the legitimacy, morality, or worth of the people's preferences is not considered. With naïve economic utilitarianism, moral evaluation becomes a form of instrumental evaluation based on the overall human well being produced. Thompson sums naïve economic utilitarianism in three points

1) Social problems are limited to the selection of means for maximizing the satisfaction of personal preference.
2) Open markets in which individuals make free exchange of goods provide a proving ground for technology (the doctrine of allocative efficiency)
3) The test for success of technology is adoption

The first point is that policies, according to economic utilitarians, are tools for producing utility. The instrumental measurement of utility is assessed by summing individual self-interests and stands in opposition to broader notions of collective well being. Policies are therefore, evaluated according to their efficiency and their ability to maximize individual pleasure.

For agriculture, the policy problem has been seen as the problem of food scarcity, dismissing notions that scarcity may not be real! The solution according to

[2] Contemporary utilitarians would include Amartya Sen (maximizing the well being of people) and Peter Singer (maximizing the well being of sentient beings) whose philosophies are bound by the view that the rightness of any action, motive, or political institution depends solely on the goodness of the overall state of affairs consequent upon it.

the productionist paradigm is to employ the general strategy of technological innovation. The focus was to drive down the price of food, which, according to this paradigm would result in the satisfaction of maximum number of individual preferences.

As for the second point, agricultural economists have argued that the best way to allocate society's scarce resources is through an open and free market. The productionist paradigm sees the maximization of resources as the solution and gives little thought to other problems of resource maximization such as the networks of distribution. It also fails to address issues regarding externalities. (It seems contradictory to criticize the state bureaucratic regulatory structure for its inefficiencies, while making claims to the benefits of a system for managing externalities without addressing how externalities might be managed or measured). Open markets provide the proving ground for technology according to naïve economic utilitarianism; technology becomes a tool for increasing the total number of goods available. The technologically dominant green revolution increased yields tremendously. To economic utilitarians, this increased the net utility for humans. The most apparent fault of this approach is that is does not critically engage with the historical role of the agricultural research stations, land grant university research, and other barriers to the adoption of alternative forms of technology. In essence, defining the parameters of what constitutes the market is quite important.

In his third point, the test for technology is adoption. Here the free market is seen as a tool for the optimization of preference satisfaction. This assumes that the market inspires innovation through the "aggregation of uncoerced individual choices"

(Thompson, 66). Of course, this assumes that individual choices are informed by sound information and commit to the same goal (say, ecological sustainability). Again, perhaps more critical to these assumptions is how the role of institutions such as the land grant universities and development agencies in making technologies widespread is ignored or not addressed.

Given this, it becomes easy to imagine how naïve economic utilitarians with commitment to the productionist paradigm have shaped the twentieth century. The ideal of productionism suggests that the problems that arise from agriculture focus on the cost and availability of food. Any disruption in the cycle is likely to threaten overall happiness. This is an obvious and indisputable fact; starvation would certainly entail a great deal of suffering. However, as a more comprehensive view of our planet is adopted or pursued, many other problems surface from conventional agricultural practices.

While the degree to which the market has resolved relating to the cost and availability of food is arguable[3], the market has unquestionably been unable to solve other problems. Agricultural and resource economists have pointed out that the market does not allocate non-market values like soil conservation and the preservation of biodiversity unless otherwise dictated. Generally, this is in the form of regulation, fines, or the capture of external costs in the price. The real life example of this unfolded in the infamous Dust Bowl in the central United States in the 1930s. With short-debts, farmers were not given incentives to practice conservation resulting in the decline in soil fertility and subsequently led to soil erosion. The need to

increase production to service debts left little room for proper stewardship to be carried out by farmers. When proper stewardship would entail constraints on production, duties to nature seldom prevail over the productionist paradigm (Thompson, p. 72).

Early arguments linking environmental concern and agriculture are promoted as a form of land stewardship (Berry, 1978). Land stewardship by farmers involves care for the land so that it will continue to produce. It is thoroughly anthropocentric. This argument is similar to ones put forth by Pinchot conservationists and the "wise use" movement that center on human values of use and production. The dependency on clean water and fertile soil creates a marriage between stewardship and self-interest (Thompson, p. 75). However, in the era of global ecological problems, that form of stewardship cannot be seen as a sustainable form of agriculture. It is confined to the local surroundings of the farmer, who is unable to see the cumulative impacts of agriculture practice at the global, or even regional, level. It also fails to capture the externalities associated with productionism. Even discounting externalities, it has been suggested that the increased efficiency in agriculture is largely attributed to the false representation of the cost of energy, namely oil (Martinez-Alier, 1987).

It seems there is a need for a different approach in our treatment of natural resources and nature. The productionist paradigm and naïve economic utilitarianism if unabated would be a disaster for the planet and the ecosystems it supports. The consensus has set out on a path to pursue sustainable development as the method of

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[3] It could be suggested that food security has become more problematic with the development of export driven agricultural economies and their dependence on staple imports to feed the local populations.

straying away from the ecological crisis. The jury is still deliberating its usefulness as a policy concept.

1.3 The Concept of Sustainable Development

Sustainable development is a concept that emerged in the late 60s as a response to the idea that growth and efficiency was the primary goal of society. It has become a policy paradigm based on the idea that current human consumption and production practices cannot be sustained. This concept has challenged the notion that technological evolution and economic indicators are the primary measures of progress. Questioning many of the assumptions of the naïve economic utilitarians and the paradigm of production, sustainable development is the result of the shift in ideology (or rhetoric) from the cornucopian earth with unlimited resources (Simon, 1981) to one with finite resources (Daly, 1995).

The sustainable development paradigm was first fostered by the concept of appropriate technology and decentralized small-scale development. These original propositions on sustainable development were visionary, yet thought to be unobtainable. It was recognized that the values that run contrary to the goals of sustainable development were deeply embedded in our religious, cultural, economic, and social systems. The task seemed daunting.

In the 1980s, the concept shifted from what *should* be done to what *could* be done. The shift culminated in the UN World Commission on Environment and Development, otherwise known as the Brundtland Report (1987). The more popular definition of sustainable development emerged from this report.

"Sustainable Development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

The Brundtland Commission Report entitled *Our Common Future* proceeded to define sustainable development as conscious economic development that considers "economic, social, and ecological factors in both living and nonliving elements combined with the consideration of the advantages and disadvantages of human actions in the short and long term" (WCED, 1987). According to the Brundtland Commission, the report provided a framework for integrating environmental policies into development strategies. However, there are several problematic elements that arise from the way sustainable development is defined.

The most central problem with regard to this thesis is the document's tendency towards anthropocentrism. Sustainable development in the context of the Brundtland Report has an underlying assumption similar to what Bryan Norton calls the "Axiom of Future Value." It follows that "The continuance and thriving of the human species (and its evolutionary successors) is a good thing, and every generation is obliged to do what is necessary to perpetuate the good" (Norton, 1991). Again, this is a difficult idea to oppose. The point of questioning it is to ask whether or not it serves as a viable justification for the goals of environmental policy.

The emphasis on the protection of the human species and the satisfaction of human preferences rings similar to utilitarian arguments mentioned in the discussion

of the conventional agriculture ethic earlier. However, there are two major differences that separate it from naïve economic utilitarianism. First, naive utilitarianism accepts the assumption that natural and man-made capital are substitutes (Daly, 1995). Those who accept this assumption are ascribing to weak sustainability according to Herman Daly. Weak sustainability requires that the sum of natural and man-made capital be maintained since they are substitutes. This argument is suggested by the late economist Julian Simon who has described the Earth's resources as being infinite (Simon, 1981). Strong sustainability differs from weak in that it views natural and man-made capital as being complements. In this scenario, natural capital is the limiting factor. Daly asks, "What good is a sawmill without a forest; a fishing boat without petroleum deposits; an irrigated farm without an aquifer or river?" While weak sustainability confines itself to the law of conservation of mass, it ignores the 2nd Law of Thermodynamics (entropy). That is, while it is true that matter is simply converted to other forms, it cannot be done without transferring some energy into an unusable form.

The second major difference from naïve utilitarianism is of course the focus on intergenerational equity. Naïve utilitarians focus exclusively on the satisfaction of existing human preferences and give no regard to future generations. Strong sustainability gives moral consideration to future generations. For example, Yosemite Valley should be preserved so as to inspire future generations of humans who glance upon it. Another example would be; tropical rainforests of Brazil should be preserved so as to allow future generations to utilize the biodiversity that could lead the discovery of pharmaceuticals. While the justification from the position of

intergenerational equity at the surface seems convincing, there are several issues that point to inconsistencies of policy goals justified in this manner.

If two paths are proposed, say, strong sustainability and weak sustainability, then two future scenarios arise. In the first, the future generation A is endowed with a fully functioning planet with functioning ecology and reserves of natural resources. In the second, scenario the future generation B is left with much less. The question remains, do human have moral obligations to ensure the welfare of future generations? Since the values and interests of future generations is not known, it is not possible to have moral obligations to them.

Herman Daly suggests that the "welfare of future generations is beyond our control and fundamentally none of our business" (Daly, 1995). He goes on to say that, "our obligation therefore, is not to guarantee their welfare but their capacity to produce, in the form of a minimum level of natural capital..." (ibid.). This is typical of the instrumental justifications for pursuing policies with sustainable development central to their objective.

Perhaps the most problematic of all issues around sustainability and intergenerational equity for philosophy is the identity problem. Explored by Derek Parfit (1983), the identity problem suggest there cannot be obligations to future generations because it is not possible that a policy will make one set of humans better off than they would otherwise be. Instead, it will make one *actual* set of humans as opposed to a multitude of other sets of humans. This point is premised on the biological fact that a person's identity is determined by a host of temporally sensitive genotypical and phenotypical factors (Elliot, 1989). In this sense, every decision in

some way determines which people become actual. This point critically undermines environmentalist's arguments to conservation based on the rights of future generations. A future person's rights cannot be determined if the policy will define who comes into existence.

Other problems arise out of sustainability in the context of intergenerational equity. Nobel Economics Laureate Robert Solow points out that a problem with intergenerational equity arises from its failure to be concerned about those today. "There is something terribly inconsistent about people who profess to be concerned about the welfare of future generations but do not seem to be concerned about the welfare of poor people today" (Solow, p.454). This rings similar to other issues relating to environmental justice.

The Brundtland Report's emergence from the United Nations body is clearly an attempt to bridge issues that separate developed and developing countries. Though it has not had much success beyond its rhetorical implications, it points to the need for both industrialized and less-developed nations to change their production and consumption practices. But very little has actually changed. Instead, sustainable development has received much criticism from developing countries that often liken it to a form of cultural imperialism or as way to prevent developing countries from becoming developed.

Are there obligations to pursue sustainable development on behalf of the world's poor? The discourse on sustainability does go beyond the weak/strong divide. Many from a third world perspective see the ecological crisis as a question of scale and cultural values. They call for the developed world's urban and industrial centers

to scale back demand for natural resources from the developing world. It is a common perception to see sustainable development as a means for justifying "sustained growth" in industrial economies. In fact, the *Limits to Growth* (Meadows, 1973) put the terms development and sustainable on opposite poles, suggesting that the combination of the two was a paradox. Others see the environmental degradation that affects the world's poor and landless as a "question of sheer survival, not enhancing the quality of life" (Guha, 1989).

The claims for sustainable development, both weak and strong, have come up short in trying to provide a justified balance between economy, society, and nature. There is one familiar theme in all of these claims. They are all rooted in instrumental anthropocentrism. That is, sustainability is to be achieved on behalf of the instrumental value of human use. These justifications are tied to the satisfaction of human preferences; nature must be preserved for the benefits it provides to humans: aesthetic, economic, or spiritual.

Where anthropocentrism typically fails is in its internalization of ecological externalities. How does one value ecological entities and integrate that value into an instrumental economy? It has been suggested that applying an anthropocentric ethic to a situation where everyone has rights is likely to be successful in protecting ecological capital to some extent (Stone, 1973). Though this seems unlikely, given that justice is often not possible even amongst human populations (who are supposedly given equal rights) as environmental justice advocates in the developing world and in the developed world's inner cities and rural towns will tell. From this, it is not clear how nonhuman nature would fit a framework of sustainable development.

The Brundtland Report suggests that the alleviation of poverty is the upshot to protecting the planet. This lays no groundwork for the incorporation of nonhuman nature. For the many reasons cited in the introduction, it is uncertain why humans would even value nonhuman nature if adequate substitutes become available.

With regard to agriculture, sustainable development raises many questions. What are the institutional and policy goals of a sustainable agriculture? The Brundtland Report's own focus on poverty needs to be addressed in a way in which the comments of Avery (1996, 1997) and his industrial agriculture contingent are not limited to defining cheap food policy as playing a central role in poverty alleviation.

The role of the state in visualizing a sustainable agriculture has been severely limited. Given the political role that industrial agriculture plays in everything from the World Trade Organization negotiations on agricultural subsidies to the distribution of water in the American West, this is not a profound pronouncement. Social movements have stepped in to fill a void created by the state. Social movements from a variety of motives (human health, rural livelihood, ecological stability) have played a major role in shaping the agenda for developing a sustainable agriculture that seeks to address some the structural problems around the production of food commodities. Many of these sentiments are rooted in a nonanthropocentric or ecocentric ideology while others are drawn in by anthropocentrism. In this sense, these movements have contributed to the notion of ethical pluralism. These pluralist ethical movements forge links with the consumer, nature, and producer. These organizing efforts have arguably been most successful with coffee.

1.4 Coffee Production and the Ethical Trade Movements

Historically, for agriculture, the context of sustainability has generally taken the form of a concept that entails keeping land fertile and able to produce human preferences (Berry, 1978). The many unwanted consequences of such a view led to several realizations about agricultural production. The productionist paradigm employed by the global agro-food system brings food to the consumer that is only apparently cheap. Much of the long-term cost of food is paid for by present and future generations in the form of environmental degradation, health risks, and reduced stocks of natural resources such as soil, forests, and fossil fuels. Non-human nature also is exacted a tremendous cost by agriculture by changes in land use that have devastated wilderness habitat and biodiversity.

The commodification of agricultural production has also disrupted the cultural practice of tending and cultivating the land (Lamb, 1994). It has resulted in rural poverty and the exposure of agricultural workers, many of them migrants with few to no rights, to unhealthy doses of agro-chemical inputs. This history has generated repeated calls for a sustainable agriculture that seeks to balance the food requirements of a human population with responsible means of distribution (wages and basic needs) and ecological systems.

Ethical trade movements have challenged the socially and ecologically destructive relations of the global agro-food system. This can be seen more largely as a potential means of countering problematic symptoms of modernity and globalization. These movements have critiqued the conventional consumption and

production patterns and look to instill moral values into international trade and development by simultaneously addressing the consumer, producer, and nature.

Ethical trade has employed the tactic of putting moral considerability into the purchasing habits of Western (generally wealthy) consumers. Ethical goods are becoming major commodities and have experienced dramatic growth in recent years. This can be attributed largely to labeling initiatives and the promotion of consumer awareness. The ethical trade movement has made the most ground in the commodity of coffee. The movement's goal: sustainable coffee.

Coffee, the second most valuable exported legal commodity on Earth, has experienced a shift in cultivation practices from traditional "shade grown" to "full sun" as a result of globally competitive markets and the international institutional practices that flank neo-liberal globalization. Native to Ethiopia, coffee is now grown as a cash crop in countries around the globe in countries that lie between the Tropic of Cancer and the Tropic of Capricorn. It is grown in two major varieties, the cheaper *coffea canephora* (Robusta) and the more expensive *coffea arabica* (Arabica). Coffee is grown on small shrub-like trees that take three to five years to begin producing beans. (This long time between sow and reap explains the implications of frosts, which kill the tree, on the volatile coffee markets and the dramatic price increases that follow.)

The product is consumed primarily in the developed world with European Community and the United States accounting for about 2/3 of global consumption. Most of the production, however, comes from the biodiversity rich tropics. More

specifically, 80% of global coffee production is rooted in the mountains of tropical South and Central America.

Table 1.1: Coffee Producing Countries
(Source: International Coffee Organization)

Country	*Variety*	*1999 Production (000 bags)*
Brazil	A/R	32,342
Vietnam	R	11,648
Columbia	A	9,335
Mexico	A	6,442
Cote d'Ivoire	R	5,899
India	A/R	5,457
Indonesia	A/R	5,432
Guatemala	A/R	5,201
Ethiopia	A	3,505
Uganda	A/R	3,097
Honduras	A	2,985
El Salvador	A	2,835
Peru	A	2,506
Costa Rica	A	2,404
Nicaragua	A	1,533
Kenya	A	1,501

Even as the productionist paradigm began to wane in the years after the publishing of Rachel Carson's *Silent Spring,* it continued in coffee production. The "sun intensive" hybrid varieties grew faster and yielded far more bean per hectare. This practice required more agricultural inputs like fertilizer and pesticide. Therefore, the conversion required substantial financial resources from development banks and donor countries, as rural farmers in these countries did not have access to credit. Typically, this locks farmers in a debt-cycle, as they are never able to fully pay back the amount borrowed. So even as the United States and Europe were beginning to

question the productionist paradigm, the major arms of international development were firmly embracing it in developing countries.

In the 1970s and into the early 1980s, the United States Agency for International Development (USAID) gave over $80 million dollars to coffee plantations in Central America to modernize coffee production (Greenberg, 1998). This was justified on the same premise as much of neo-liberal globalization's policies are. (USAID still has several "full sun" conversion projects in El Salvador, Honduras, and Guatemala.) This aid focused on the purchasing of agro-chemical inputs and the stripping of coffee fields of shade trees to convert them to higher yielding and more profitable sun-rich varieties. The globalization of this cash crop industry has led to the continued desire for intensive production and generated a need to increase efficiency to compete in the global market. As a result, conventional coffee farms are replacing the traditional shade farms at a rapid pace. Almost 40% of the industry in Central America has already gone through the transition (Greenberg, 1998). The results have been disastrous for migratory species, their ecosystems, and the rural way of life.

Traditionally, coffee has been grown under a canopy of trees; Coffee is a sub-canopy shrub. However, there are not simply two methods of growing coffee. Coffee farms exist on spectrum of shade intensity and natural disturbance. Rustic (*rusticano)* coffees are planted under the canopy of existing forest with little disturbance to native plants. Traditional polyculture *(policultura tradicional)* integrates other nonnative agricultural plants to allow farmers to grow a diversity of plants. Commercial polyculture *(policultura comercial)* is similar to traditional polyculture with a greater emphasis on coffee than trees and often requires the application of pesticides and

fertilizers. Reduced or specialized shade *(sombra especializada)* uses only a single canopy to produce shade.

Studies of these farms suggest that biodiversity is a function of the degree to which the canopy is developed (VanDeMeer, 1998). In the most developed canopies, biodiversity can be found at levels that approach habitat in a natural state. A study from the Smithsonian Migratory Bird Center found healthy populations of 150 different species of birds living on a shade coffee farm (Pimentel, 1992).

"Full sun" monoculture grows on industrial plantations resembling a biological desert with very little diversity. These plantations can fit 3,000 to 7,000 plants per hectare as opposed to the 1,000 to 2,000 that shade farms fit. The Smithsonian study found only 20 different species of birds living on full sun farms (Pimentel, 1992). Industrial plantations also require more petroleum-based inputs. The increased exposure to full sun creates a need for fertilizer to balance the energy intake. The reliance on a monoculture creates a breeding ground for pest infestation and the need for increased pesticide use. In contrast, it has been demonstrated to statistical significance that diverse farms are more able to suppress pest outbreaks (VanDeMeer, 1998).

The need for all of these inputs exacts a toll on the farmer's profit margin and requires external investment. These large capital expenses required to carry out these processes tend to shut out small farmers making them unable to compete, eventually leading to a concentration of farm ownership in larger firms. This trend in concentration ownership is typical of many industries in the neo-liberal order.

The maintenance of shade farms is more labor intensive than its technology focused counterpart. Instead of using fertilizer shade grown coffee utilizes fixed nitrogen in the soil given off by the root systems of canopy trees. Pests in shade grown farms are eaten by the wealth of bird diversity allowed to coexist with coffee. The application of agricultural inputs range from none on "rustic" farms to little on "specialized" farms.

While the coffee industry focused on intensive agricultural production, it was recognized that there was a dramatic decline in migratory bird species in the Americas (Askins, Greenberg, & Lynch, 1990). Habitat destruction for forestry and agriculture was primarily to blame (VanDeMeer, 1998). Thus, many nongovernmental organizations (NGOs) and social movement groups took up the problem instigated by neo-liberal globalization and the productionist paradigm.

Aside from the NGOs traditional role as activist, lobbyist, and coordinator, these groups made direct appeals to consumers. A challenge was made to consumers to add an ethical dimension into their purchasing decisions. NGOs saw the problem of habitat destruction as being clearly related to the decline in migratory birds and began to set up a system certification. This certification would provide consumers with a 3rd party claim as to the product's sustainability. The ethical trade movement in coffee production has advanced certification schemes on three fronts: shade grown, organic, and fair trade.

Advocates for shade grown coffee production use the dual themes of carbon sequestration and protection of biodiversity as central to the arguments. In a more holistic approach to confronting climate change, shade grown methods use trees

which sequester carbon from the atmosphere. These trees also provide habitat not only for varieties of plants, mosses, and insects, moreover, migratory species such as birds and cougars. The "full sun" plantations do not offer these protections and are often sterile environments devoid of life. There are seven million acres of area of coffee production in Latin America in the Neo-tropics at altitude between 1,500 and 4,500. The critical habitats of many species are at risk to the conversion of land to sun rich coffee plantations.

The organic agriculture movement has sought to re-embed production in natural processes. Organic agriculture requires the utilization of ecological relationships and balances. The non-application (or limited application) of agro-chemicals contributes to a living soil biota. This method employs methods dictated by the laws of ecology seeking to balance parasite-host relationships in agricultural systems.

Others have justified organic agriculture by recognizing the externalities associated with the chemical industry. Applying agro-chemicals also means they have to be produced. There are many impacts simply associated with the production and transportation of agro-chemicals. The mining of phosphorous is both polluting and energy intensive. The rivers near the chemical plants are contaminated with wastes from production. Chemical plants use large quantities of energy in their production. The shipping of freight across the world contributes to other energy issues. Since organic agriculture seeks to minimize inputs, this ideally reduces the amount of pollution coming from chemical plants; massive quantities of energy do not need to be spent in shipping the freight.

The Fair trade movement has sought to improve the conditions of production and distribution. Fair traded coffee is often coupled with one of the aforementioned methods above. It recognizes the cycle of poverty of the rural poor that results from farmers selling speculative rights on future harvests in return for agro-chemical inputs and other technological 'necessities'. Traditional coffee sells on the "C market" of international commodities. The rate that the farmer actually receives is about 30-50% of the C market value (James, 2000). The market value for coffee was typically stabilized at or about $1.00/lb. by the International Coffee Agreement, which collapsed in 1989 (ibid.). It has subsequently plummeted to all time record lows at about $0.425/lb after peaking at $3.05/lb. in May 1997 (DePalma, 2001).

By appealing to the plight of the developing world's farmers, Fair Trade has fostered a link between the farmer and the consumer. Farmers are paid a fixed rate of $1.26/lb regardless of how low the market rate is and are paid a premium of $0.05/lb. above market rate if the price exceeds the minimum. This shields farmers from the drastic price fluctuations of the global commodity markets. This connection also allows farmers to get a fair price for their work without the deep cuts of *coyotes* (middle persons) who take their beans to market. The costs of monitoring and certification are also paid for by importers in the North as opposed to producers (Raynolds, 2000) another buffer against price fluctuations.

The labeling initiatives like those of TransFair, Fairtrade Mark, and Max Havelaar have been central to this movement. The groups all fall under the umbrella organization Fairtrade Labelling Organization International (FLO), which represents

members in 17 countries. FLO has also expanded into bananas, cocoa, tea, sugar, honey and orange juice. Its major influence has been in coffee production.

Table 1.2: Major Importers and Exporters of Fair Trade Coffee, 2000

Importers (million lbs.)		Exporters (million lbs.)	
Netherlands	6.8	Mexico	7.3
Germany	6.8	Peru	4.2
United States	4.3	Colombia	3.4
Switzerland	3	Guatemala	2.8
United Kingdom	2.9	Nicaragua	2.5
Denmark	1.6	Tanzania	2.2

(Sources: MaxHavelaar Belgium, 2001; TransFair USA, 2001)

The ethical trade movement has done much in its quest for a sustainable approach. It has heavily relied on volunteer and non-profit work, something it cannot rely on sustaining. Nor can it be expected that appealing to consumer ethics will endure. If these practices are in fact deemed sustainable, it is the responsibility of the development agencies as well as producing and consuming countries to provide the necessary financial support to ensure its viability or at the very least change current policies that seek to undermine it[4]. The goals of sustainable agriculture need to be incorporated into a policy framework. The problem of course is how to define sustainable. It is here that environmental ethics can make a contribution.

Since much of the debate in environmental ethics has centered on the value of nature, one may ask, why not bracket off agriculture as an artifactual system not worthy of moral consideration? It is not natural in any sense of the word, thus, not a

topic of debate environmental ethics. Agriculture becomes an artifact in this context, subject to human instrumental value.

There are several perspectives from which this argument can be examined, some more useful than others. The first perspective would be to suggest that all of what is deemed natural exhibits anthropogenic activity either by direct alteration, for example, the role of indigenous peoples in shaping the ecology of New England (Cronon, 1983), or indirectly, by say the role of anthropogenic climate change in shaping global ecology. Unfortunately, this approach reveals little about how human society should interact with nature in a responsible manner.

A second, more covert argument would suggest that what humans do in the artifactual world has profound implications for ecologically stable (or dynamic) systems, i.e., what environmental philosophers call natural. For agriculture, this is unquestionable. This topic has received little attention in the environmental ethics debates. For ethical consumer movements, the role of both nonanthropocentric and anthropocentric arguments may central to developing the necessary discourse on sustainability. For environmental ethics, it seems to be critical that these explorations be made so as to provide the broadest possible political and moral support for justifying action. Care should be taken to ensure that arguments be clear in this manner, so as to avoid strengthening the arguments that are so limited in scope such those who propose that organic agriculture is an enemy of nature (Avery, 1996; Avery, 1997). Anyone who clearly sees the larger good of organic, shade, and fair trade coffee would see that it becomes an enemy to nature only when nature is defined

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[4] World Bank and IMF policies have been a major factor in increasing Vietnam's coffee production

in rigid dualistic terms. If the goal of environmental ethics is to make a significant contribution to resolving the ecological crisis, it must pluralize arguments so as to make them politically viable (Light, 1996) and it must be clear to avoid the reification of false dualisms (Katz, 1999). It is in this context that it becomes important to discuss the implications of extensive versus intensive agriculture for environmental ethics.

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from 20th in the world to 2nd over the duration of a few years, thus driving down the price of coffee.

CHAPTER 2

FRAMING AN ETHIC FOR SUSTINABLE AGRICULTURE

There are several conflicts that arise in the treatment of agriculture in contemporary environmental ethics that deserve attention. The focus will here be on two of them. The first is the tension between sustainable agriculture (anthropocentric instrumental value) and wilderness preservation (nonanthropocentric intrinsic value). At the surface, this seems reminiscent of a classic Muir-Pinchot (preservationist-conservationist) debate on values and uses of nature. Since sustainable agriculture as defined by the sustainable agriculture social movement is necessarily extensive, arguments centered on anthropocentric instrumental values come into conflict with justifications hinged on nonanthropocentric intrinsic values that seek the maximization natural systems in order to avert an ecological crisis.

In passing, it is worth noting that it is not required that this land come from natural systems per say, this extra productive capacity could come from other instrumental land use sources as well. In fact, this could be used as a covert argument for vegetarianism to be a critical component of any sustainable agriculture. One could argue that in order to avoid seeking additional productive capacity from natural systems, it is required that the current land and water uses dedicated to 'growing' meat (including the vast acreage dedicated to animal feed) be returned to direct sources of human crops.

The second conflict arises from the dual themes of artifactual and natural systems. If nonanthropocentric intrinsic value is central to the preservation of natural systems, what does this tell us about artifactual systems like agriculture? What happens if the treatment of agricultural systems has profound impacts on natural systems? Agriculture has had a significant impact on natural systems by directly modifying the matrix. This fragmentation effects the ecological carrying capacity by effective isolation (Ricketts, 2001). Does it therefore become necessary to break down these dualisms to provide a framework for extending intrinsic value to biotic systems that are not natural?

2.1 Duties to the Biotic Community

Does nature have intrinsic value or should nature be valued based upon its utility to humans? Should policy be driven by values of anthropocentrism or nonanthropocentrism? As was discussed in the introduction, there are logical failures in the policy justifications from anthropocentric worldviews. The most critical pertaining to the need to preserve nature based on the satisfaction of human interests fails to address the availability of adequate substitutes (Katz, 1997). Do the same failures exist for nonanthropocentrism? In its regard for nature, many would say no (see Katz, Callicott, Rolston, III to name a few). However, the major criticisms of nonanthropocentrism include its tendency toward misanthropy[5] (Callicott, 1980) and eco-fascism.

[5] Callicott no longer believes that this is the case, nevertheless, many including most social ecologists still believe that nonanthropocentrism is misanthropic.

Much of the nonanthropocentric arguments have made the words Aldo Leopold, who has become somewhat of a patron saint in the ethics literature, central to the construction of an environmental ethic. Leopold offers the following maxim based on the notion of community in his "The Land Ethic,"

> *...Quit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient.* ***A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends to do otherwise*** *(Leopold, 1949, bold emphasis added).*

This points to agricultural policy that is informed by the laws of ecology. Once land is popularly perceived as a biotic community, as it is professionally perceived in ecology, a correlative land ethic will emerge in the collective cultural consciousness (Callicott, p.187). The idea proposed by Leopold is to expand the boundary of moral consideration to include the biota, that is, "soils, waters, plants, and animals, or collectively: the land" (Leopold, 1949, p. 239). This view reflects an ecological conscience as cleavage B in Leopold's "A-B Cleavage" does.

Group A: "Regards the land as soil, and its function as commodity production" (Leopold, 1949). This treatment is similar to naïve economic utilitarianism and the productionist paradigm. The soil is seen as the only object requiring inputs (which, of course, are outputs from somewhere else if the form of energy, etc.). Balance is

achieved by adding components to the soil, thus, creating an entirely artifactual system thoroughly implicating human techniques of manipulation. As Leopold points out, no consideration is given to the secondary functions: wildlife, watersheds, and wilderness.

Group B, the group with an "ecological conscience" offers moral consideration for nonhuman entities such as "the land." Leopold's specific background in forestry made him admittedly "less competent to speak" on issues as they relate to agriculture. Nonetheless, he spoke of a new vision of "biotic farming" which insisted on the "importance of soil flora and fauna." Agriculture…

> *…repeated the same basic paradoxes: man the conqueror versus man the biotic citizen; science the sharpener of his sword versus man science the searchlight in his universe; land the slave and servant versus land the collective organism. (Leopold, 1949, p.260)*

Viewing the land as a collective organism[6] requires an ecological way of thinking, a non-reductionist point of view. That is, it involves recognizing that everything is connected to everything else. Ecology differs greatly from the traditional sciences because ecological relationships determine the nature of organisms rather than the other way around (Callicott, p. 190). "Ecology and evolution have taught us that every kind of life is what is it is environmentally, not autonomously" (Rolston,

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[6] This is not to endorse the organism model over the community model. The organism model has been discredited for its overemphasis on the functional dependency of all the entities in the system (Katz, 1985).

1988). Thus, an ethic informed by ecology and its interconnectedness is fundamentally holistic. The collective ecology is described as an energy circuit in Leopold's "Land Pyramid."

> *Land...is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals. Food chains are the living channels which conduct energy upward; death and decay return it to the soil. The circuit is not closed...but it is a sustained circuit, like a slowly augmented revolving fund of life (Leopold, 1949, p.253).*

Finding intrinsic value in the land pyramid requires valuing the ecosystems and their connections over the individual. This runs contrary to utilitarian and contractarian theories that focus solely on the individual. Ecological communities, not individuals, are the real locus of values in nature (Callicott, 1987). Moreover, a community of autonomous yet independent entities based on Leopold's Land Ethic can seek to balance intrinsic and instrumental imperatives relative to the individuals (farmers, the soil, etc.) in a system (Katz, 1985).

This thinking has many implications in policy circles. In United States environmental policy, laws protect individual species based on contractarian concepts of justice, yet not their habitat. So, for example, while it is illegal to kill or injure a spotted owl, it is perfectly legal to cut down the decaying tree it uses as a home (except in places where the trees are protected too). The legal focus here should not

be on the individual, moreover it should focus on the biotic community, including the decaying tree and its host of microorganisms turning it into fertile soil.

As it relates to sustainability, the land ethic assumes that the integrity of the energy circuit that has sustained life for four billion years be preserved. That requires understanding man's role in the greater ecosystem and respecting limitations. It also requires assigning intrinsic value to nonhuman nature. However, much of the literature makes distinctions on what *kind* of nature qualifies for intrinsic value. Natural systems and artifactual systems are categorically separated for this purpose.

Natural systems are those which have been minimally interfered with. Many remote wilderness areas qualify, as do many fragmented parks and reserves. Artifacts, on the other hand, are created as instruments to meet human needs or purpose. They stand in a necessary ontological relationship with human purpose (Katz, 1993). While intrinsic value can be ascribed easily to natural systems by the preceding justifications for nonanthropocentrism, doing so for artifactual systems is troublesome for some philosophers.

2.2 Another Pragmatic Reconsideration

In policy actuated by ethical considerations, there are two extremes of agricultural production: large-scale intensive agriculture or small-scale extensive agriculture. A large scale intensive agriculture, would involve stripping the land to its bare soil by mechanized tilling, planting fast growing high yielding plants, employing mechanized harvesting techniques and re-fertilizing the soil with synthetic petroleum based

fertilizers. This process is occurring on coffee farms from Central and South America to Africa to East Asia. It draws its heavily on the paradigm of productionism. As mentioned in an earlier chapter, this modernization process has had profound effects on everything from ecology to rural livelihoods.

The small-scale model is the one promoted by the ethical trade movement which seeks to use less intensive practices that fit a bioregional model. It is in the context of concern for the livelihood of rural farmers and the ecological community that sustainable agriculture is defined here. What are the normative conclusions of anthropocentrism and nonanthropocentrism with regard defining sustainable agriculture?

To gain an understanding of what the various justifications that emanate from anthropocentric and nonanthropocentric worldviews, the pragmatic method will be employed in the manner such as Katz uses in a recent article in the journal *Environmental Ethics* (1999). Pragmatists (and those who refer to themselves as pluralists) argue that the debate between anthropocentrism and nonanthropocentrism is nothing more than intellectually stimulating and does not lend itself to practical policy situations. Bryan Norton in his criticism of moral monism, the view that a single principle suffices to support a uniquely correct moral judgement in every situation, asks…

> "*Could it be that the polarized thinking that paralyzes environmental policy today results from false alternatives forced upon us by neoclassical economists and by most of their opponents alike, that*

whatever the units of environmental value turn out to be, there will only be one kind of them?" (Norton, 1991).

Norton claims in his convergence hypothesis that there is much common ground in the debates between anthropocentrism and nonanthropocentrism (Norton, 1991; 1996). It is in this context, that Light has made calls for a responsible and complete environmental philosophy that includes a public component and policy emphasis (Light, 2001). It practices a form of agnosticism concerning the debate between nonanthropocentrism and anthropocentrism and seeks to articulate justifications that are relevant to current debates in policy. Light seeks to find common ground by embarking on a methodological environmental pragmatism that accept claims from both. For Light, methodological environmental pragmatism is a public task and necessarily has components of anthropocentrism, because in practical policy terms most people tend to find anthropocentrism more appealing to their moral intuitions (Light, 2001). Grounding a public policy in nonanthropocentrism would require either a form of eco-fascism or, more democratically, changing the moral intuitions of the general public (a daunting task to say the least!).

Methodological environmental pragmatism can perhaps be useful in the context of agriculture. As will be demonstrated, this will not be a clear case of convergence. The pragmatic method has already been demonstrated to be quite useful in dealing with largely artifactual systems as with the case of the fortified shoreline of Fire Island, NY (Katz, 1999). The question remains as to whether a fortified shoreline

and a sustainable agricultural system are to the same degree artifactual, or even if that distinction is useful.

What is the pragmatic difference between anthropocentrism and nonanthropocentrism in pursuing policies that promote sustainable agriculture coffee? The anthropocentric arguments would make claims based on the instrumental value of sustainable agriculture to humans. The anthropocentric debates would pit those advocating a weak sustainability in the form of cheap food policies and the status quo versus a strong sustainability based on the arguments of the sustainable agriculture movement. Since it is clear that anthropocentric cheap food policies have been devastating to ecosystems, rural livelihoods, and even the sedentary lifestyle, they will be given little credence here. Focus here will be given to the anthropocentric arguments put forth by sustainable agriculture advocates.

A sustainable agriculture based on fair trade, as described in the first chapter, would be in the interest for humans for many reasons including savings in energy and raw material costs of agro-inputs. A major anthropocentric consideration is the treatment of human beings through the distribution of risks (exposure to chemicals for example) and benefits (a fair, living wage to the rural poor). Farmers and farm-workers would benefit because of the higher price they receive for their product. Sustainable agriculture would also benefit farmer and farm-worker health and the health of those who don't live near the farm yet live near fertilizer and pesticide plants. A sustainable agriculture here would imply that mountainsides would be less susceptible to wind erosion and soil erosion due to flooding as the trees under which the crops grow holds together soil and water. (Hurricane Mitch killed over ten

thousand people, many of who died as a result of massive mudslides and floods which many blame on the clear-cutting to make room for an intensive industrial agriculture.)

There are also anthropocentric considerations for the impacts of global warming. Sustainable agriculture invites carbon sequestration. The soil holds more carbon because it is not "mined" of life and the trees and other canopy plants store carbon in their fiber. The threats associated with anthropogenic global warming are well known: global sea-level rise, erosion, and erratic weather patterns, and requires no detailed discussion here. These benefits acquired from tree cover also maintain water quality and do much to sustain watersheds. Because a thoroughly intensive agriculture would be energy intensive (i.e., reliant on mechanization and non-labor agricultural input), it does not holistically point in a direction of sustainability. A final consideration deals with the high levels of biodiversity found on shade grown coffee farms. It would follow that the preservation of habitat here for bio-prospecting and eco-tourism also serves anthropocentric ends by drawing in foreign capital.

Anthropocentrism entails a policy of pursuing sustainable agriculture. Human needs can be achieved through sustainable agriculture and outweigh the paradigms of productionism and naïve economic utilitarianism. In pitting weak anthropocentric sustainability versus strong anthropocentric sustainability, human needs can be better justified by the former. Sustainable agriculture, therefore, is justified by anthropocentrism.

Can it be assumed that there is no need to discuss nonanthropocentrism because it too will justify sustainable agriculture? Does it need to be discussed at all because what is being dealt with is largely an artifactual system and therefore, no

nonanthropocentric arguments become irrelevant (Katz, 1999)? This idea is much more complicated than is suggested by these questions. Pursuing a sustainable agriculture would require more land devoted to agricultural production. That is, the decreased yield on what would be considered sustainable farms creates the need to make up for this by sequestering more lands into production. This does not necessarily require taking over wilderness areas per se as the covert vegetarian argument demonstrated. Many areas where traditional farms exist do lie within the boundaries of preserved systems resulting in conflicts over land use. Whatever the case may be, sustainable agriculture does involve a substantial shift in land use somewhere to make up for the lost quantities and yields. If nonanthropocentrism seeks to maximize the intrinsically valuable natural systems, does nonanthropocentrism in this case point to the productionist paradigm?

To begin two aspects that are not central to, and outside the scope of, this thesis must be bracketed off, the efficiency of the distribution of agricultural products and the localization of food production[7]. First, there are, perhaps, ways to decrease the level of wasted products and improve access to agricultural products. This problem is largely a political and economic one. One that perhaps will change as (if!) externalities are incorporated into the true costs. Second, the localization of food production does impact the environment positively. The localization of food, while it can be done seasonally in many areas is not possible everywhere. Coffee, for example,

[7] A third aspect that has not been addressed in the literature is the fact that coffee is not a food but a drug. It could therefore be argued that its production is not necessary at all. However, this would not be in the interests of a pragmatic approach since it is likely that coffee will be in high demand as a commodity for generations to come.

is impossible to grow anywhere outside of the tropics. Thus, localization is not an option in this context.

Returning to the suggestion that nonanthropocentrism implies productionism: is this a realistic assumption? As mentioned earlier, according to Avery, this is the case. His assumption that natural areas will suffer from widespread adoption of sustainable agriculture practices (as defined by the sustainable agriculture movements) is strikingly in tune with the justifications made by nonanthropocentrism seeking to maximize natural areas. This exercise illuminates the fact that the only thing keeping convergence from happening is this idea of maximizing natural areas. Is there a way to expand this framework?

Treatment of Aldo Leopold's nonanthropocentric land ethic in regard to sustainable agriculture points to the productionist paradigm because as interpreted by several environmental ethicists (Katz, Callicott) the biotic community is limited to the natural community. It follows that a policy that would maximize natural areas should be pursued. It could be argued, however, that this is not what was implied by Leopold's land ethic. The ethic should not be limited to natural areas. In contrast, it should entail the biotic community as a whole, including artifacts such as agriculture. If the interests of the biotic community (i.e., the establishment of biological corridors via sustainable agriculture) are not served by the limited view of nonanthropocentrism it becomes necessary to expand this view. How does the land ethic manifest itself in an agricultural context? To clear this paradox Paul Thompson (1994) paraphrases Leopold

> *An* ***agriculture*** *is, then, right when it tends to preserve the integrity, stability, and beauty of the biotic community; but the most problematic ambiguity of holism confronts us immediately. Agriculture is perhaps the most thoroughly invasive and disruptive of all human impacts upon natural ecosystems…*

Leopold's maxim of preservation conflicts with the artifactual systems of agriculture if the biotic community is interpreted in a strictly natural sense. It presents us with a paradox. If human intervention is intrinsically nonnatural, there is little room for the land ethic in agricultural practice. Can Leopold's maxim be taken to increase the intensity of agricultural production such that larger tracts of wilderness be preserved? Thompson suggests that this does not preserve the biotic community in the sense implied by Leopold.

Does the traditional treatment of Leopold's land ethic *really* change because the system under consideration is a natural system? Katz (1999) argues that nonanthropocentric ecological holistic arguments become irrelevant in artifactual systems. This argument is based on the premise that the reason humans create artifacts is to further the interests of humans (Katz, 1997). "We tend to evaluate the worth of our artifacts and human-made systems by their success in achieving human centered aims (Katz, 1999)." According to this, anthropocentric arguments suffice for nonnatural systems. Again, what if the artifact under question affects the integrity and stability elsewhere? It has been demonstrated by many ecologists that the fragmentation of habitat for agriculture has resulted in dramatic declines in migratory

species (VanDeMeer, 1998). Studies have revealed parallel trends in declining migratory birds and the transition to sun intensive crops in Central America (Askins, *et al.,* 1990). Given the impact of agriculture on natural systems, should it assume a new role in the biotic community? Do migratory species become less morally considerable as it moves through the matrix (fragmented habitat)? Or is there a duty to create agro-ecological systems and protect natural systems in a holistic manner thus, preserving the integrity, stability, and beauty of the biotic community?

Sustainability should follow from the inclusion of human artifactual systems such as agriculture into the biotic community to provide the proper framework for alleviating "the most thoroughly invasive and disruptive of all human impacts on natural ecosystems." How does one operationalize this framework? The norms for operationalizing Leopold's land ethic do not simply emerge from "robustly predictive quantitative models" (Thompson, 1994).

If biotic artifactual systems such as agriculture are extended into the framework of nonanthropocentric moral consideration different results may emerge from the practical policy consequences of sustainable agriculture. Take Central and South America again, where there are many national parks and wilderness areas nestled amongst the highlands. However, at least one aspect of functioning ecosystems, the fact that some populations migrate, cannot be overlooked. The current system of protecting land here and there does not benefit many species that exceed their own carrying capacity in these fragmented lands. Most ecologists agree that despite all of the protection that has occurred as humans discover that anthropogenic development has disastrous consequences on ecosystems, what is

really needed to preserve "the integrity, stability, and beauty" of these systems are biological corridors.

Ideally, policy should be modeled so as to incorporate as many "natural" systems into these biological corridors as possible. But in many cases, this is impossible or impractical. For example, much of the lands in the tropics are inhabited by indigenous peoples who use their knowledge to farm the land as they have for centuries.[8] They have already a "land ethic." Incorporating agro-ecological lands, which offer shelter, homes, and safe passage for nonhuman life, into dual use areas for both human and nonhuman life is a goal that is both plausible and practical for sustainable development.

In the work of Katz (1999), it was necessary to distinguish artifactual and natural systems to prove the nonanthropocentric argument irrelevant. For agriculture, its treatment as an artifact prevented the most relevant issue to surface. That is, by not including agriculture into the biotic community of moral consideration, it became impossible to justify agro-ecological systems into biological corridors from a nonanthropocentric perspective. Ecologists studying 'natural' systems have made it clear that biological corridors are essential to preservation of ecological integrity. Distinguishing agriculture from the biotic community because it is not natural does not allow us to justify what is most beneficial to the overall ecological community. The establishment of biological corridors and buffers is perhaps the most relevant

[8] For an interesting discussion on this topic see David Western's "In the Dust of Kilimanjaro" and John Terborgh's "Why Conservation in the Tropics is Failing" and the subsequent exchange in Rothenberg and Ulvaeus's *The World and the Wild.*

issue to protecting the stability and integrity of natural systems according to ecologists (VanDeMeer, 1998).

2.3 Agriculture: A Place for Pragmatism?

All of the anthropocentric justifications listed above are worthy of merit. Anthropocentrism has been discredited in the environmental ethics literature as it pertains to natural systems (see Katz, Callicott). Since agriculture is an artifactual system, as Katz suggests (1999), anthropocentrism and the satisfaction of human preferences should inform policy in such a system as is the case noted above. However, since the role of biological corridors and buffers are seen as essential to the sustainability of natural systems, policy needs to be informed by nonanthropocentrism.

Whereas artifactual systems provide an exception to the use of nonanthropocentric values, perhaps biotic artifacts, such as agriculture (parks and community gardens would also apply in this context) create a niche for the ideals of Bryan Norton's pragmatic convergence theory. This theory allows for agreement on the ends between anthropocentrism and nonanthropocentrism in certain situations. While the debate continues with regard to issues that focus exclusively on natural systems, perhaps consensus can be reached on policy issues such as the case presented here. Light's methodological environmental pragmatism is a useful for exploring different claims to moral considerability. Even more useful is perhaps its ability to reign in different views to generate one coherent worldview by taking strands from

both nonanthropocentrism and anthropocentrism. If the ends are the same (or very similar), then policy should not only allow for, moreover, advocate for overlapping arguments to achieve a broad base of support to follow the ends to fruition.

For the sake of semantics, sustainable agriculture has been used to draw together competing notions in sustainable development. However, sustainable agriculture exists on a spectrum with the most natural analog to nature termed agro-ecology. In the case of sustainable agriculture, overlapping the ideals of nonanthropocentrism and anthropocentrism creates common ground for environmental policy. Obviously, caution against using this framework too widely should be recognized. It would not be in the interests of nonanthropocentrism to convert all natural areas to agro-ecological systems. This framework only applies to existing agriculture and the lands required to offset losses in production and this can be made up for without necessarily impacting natural areas.

The most important conclusion regarding methodological environmental pragmatism is that it allows for the resolution of conflicts over values. If the focus of the task is a public one then arguments should mobilize around sustainable agriculture movements such as the one promoting fair trade, shade grown, and organic coffee. This public project has three components. The first would be directing the rhetorical struggle toward the intensive agriculture industry and identifying their role in shaping public policies like the Farm Bill, labeling initiatives, and international trade negotiations. This task is set on the production aspects of policy. The second task is to mobilize rhetoric to convince consumers of an ethical consumption. If people buying coffee in the supermarket have the words of Avery (1996) in the back of their minds,

they might be conflicted as to what to purchase, especially if the public believes that organic agriculture is an enemy of nature. The third task is linked to both because it links consumption and production. It involves mobilizing rhetoric for use in consumer activism. For coffee it has been extremely important. Global Exchange, a San Francisco based NGO, was able to picket and boycott the infamous Starbucks chain (there is probably one within walking distance of anyone reading this paper!) into carrying Fair Trade certified coffee in their stores[9]. While this was a significant move for Fair Trade coffee, it still only comprises about one percent of the US coffee market (Rice and MacLean, 1999). Their next step is to pressure Proctor and Gamble, a major retailer of supermarket brand coffee. Therefore, the usefulness of a methodological pragmatism is in these real world situations where people with divergent values, yet convergent goals can seek to mobilize against those who seek to undermine both their values and their goals.

[9] Fair Trade certified coffee can now be found in some Exxon-Mobil convenience stores!

CHAPTER 3

POLICY IMPLICATIONS

What are the implications of what has been suggested in this thesis? Have imperatives for a sustainable agro-ecology been successfully justified? If so, how does that translate into practical changes in the realm of policy?

3.1 Financial and Development Institutions

The major financial and development institutions are unarguably anthropocentric in their policy orientation. Institutions such as the World Bank, World Trade Organization (WTO), and International Monetary Fund (IMF) are dominated by economic utilitarian arguments. It is their very nature to be limited to the worldview of economic (often naïve) utilitarianism. The mission statements of these institutions offer no commitments to anything beyond what might be considered weak sustainability. Their failure to commit to any form of environmentalism makes their legitimacy questionable at best (as do some of their other failures).

Policies associated with globalization have promoted productionism in agricultural economies. These institutions have focused entirely on the development export driven economies. The moving of people from the countryside to urban areas has coincided with the technification of agriculture in the bid to achieve modernization. While there are philosophical justifications for productionism, generally in the form of a cost-benefit analysis rooted in property rights, it cannot be

considered a sustainable approach because it fails to incorporate critical normative aspects of sustainability. There are other problems associated with globalization that lie outside the realm of this paper. For example, there are issues of justice that arise both with regard to the legitimacy and the historical context of property rights as well as using the satisfaction of preferences as the justification for the pricing of intrinsic and aesthetic value. These arguments have been taken up elsewhere (Sagoff, 1988; McMichael, 1996; Shiva, 1992).

Policies of international institutions such as the World Bank, IMF (the Bretton Woods Institutions), and the WTO focus strictly on arguments of productivity and allocative efficiency. Again, IMF and World Bank policy typically seek to promote increased exports in a given sector. For developing nations, these exports are generally natural resource intensive like timber, agriculture, minerals, and fossil fuels. Increases in exports, it is suggested by these institutions, allow countries to "purchase" goods such as environmental protection. In reality, this often drives developing nations to further exploit natural resources in a rush to service debt.

WTO policy seeks to break down what are seen to be barriers to trade, historically in the form of tariffs. Broadening what it defines as a barrier to trade, the WTO has taken the position that domestic regulation and laws can be considered non-tariff barriers to trade. Through the lens of allocative efficiency, these regulations are obstacles to be overcome. However, regulations are generally reflective of the ethical principles that a sovereign nation seeks to uphold. The WTO has also limited the use of trade restrictions. Critics argue that the use of trade restrictions is the only means of enforcing both national and international environmental laws. Even environmental

and ecological economists agree that the capture of externalities in the price of products will result in the true cost of a product. However, implementing policies to capture externalities is not possible under the current structure of the WTO because a) it is not allowed because externalities are seen as akin to tariffs and b) international trade rules do not distinguish products based on where or how they were made.

The proponents of these economic institutions argue that sustainability is the result of increased economic utility. Therefore, these institutions pursue policies where growth in material output is the *sine qua non* of development. To increase material output in this context generally requires a process of agricultural modernization, followed by a maquiladorazation of the new urban migrants whose cheap labor attracts foreign direct investment. This exclusive focus on economy runs contrary to the goals of sustainable development, which seeks to strike a balance between economy, nature, and society.

3.2 The Global Environmental Facility (GEF)

The GEF was set up in 1990, at the suggestion of France and Germany (Soroos, 1999). It targets four priorities: stratospheric ozone protection, greenhouse gases emissions, protection of international waters, and preservation of biodiversity. The policy framework of the GEF follows the lead of the United Nations Convention on Biological Diversity (CBD). In their Operational Strategy, they note that adoption of the CBD "as an instrument to address biodiversity conservation and sustainable use recognizes the intrinsic value of biodiversity and its importance for the evolution and

sustenance of life support systems of the biosphere" (GEF, 2001). While the semantic emphasis here is on biodiversity and not natural systems, this should hardly be a point of contention. Since the GEF is set up for developing countries, and many of these countries are in the biodiversity hotspots, it follows that the protection of natural areas (or in this case the indirect augmentation of their stability) could be considered equivalent to the protection of biodiversity rich areas.

The mission of the GEF was to provide the funds necessary to encourage developing nations to pursue projects that would benefit the global environment. Without these funds, developing nation have little incentive to allocate limited resources to environmental project in light of other compelling national priorities (Soroos, 1999). The GEF operations give priority to "conservation of areas of importance for migratory species (GEF)." While many projects preserve lands directly by establishing biological preserves, other projects promote conservation through the promotion of agro-biodiversity and sustainable production.

This idea makes the GEF relevant to the production of coffee. Without these funds the market may dictate, because there is no "capture of externalities" in the existing market, that the existing shade grown farms convert to full sun varieties. The full sun farms are more profitable because they are more intensive and require less labor. The externalities associated with water quality, natural capital, and fossil fuels are not currently set into the system. Thus, to avoid the further fragmentation of the global ecosystem, reliance on grants will be required to make the shade grown farms profitable. That is, until the fabled age of environmental economics and the capture of

externalities is attained, the more sustainable systems (and less profitable?) will require subsidization.

The GEF operates under the auspices of the United Nations Environmental Program (UNEP), United Nations Development Program (UNDP) and World Bank. The World Bank administers the trust fund and manages the application program; UNDP oversees technical assistance projects and coordinates them with national environmental programs of recipient countries; UNEP provides scientific and technical oversight and play a large role in searching out projects. Some GEF funds are allocated through a UNDP-administered Small Grants Program for project conducted by communities and NGOs.

After the inception of the GEF, it was argued by developing nations that since the structure of the GEF was similar to the World Bank, the priorities of industrialized countries would take precedent. Developing countries worried that issues such as desertification and soil loss would be marginalized. As a result of this debate the GEF was recently restructured. Now, unlike the Bretton Woods institutional policies, whose voting system reflects voter contributions to the fund, which can be implicated as a system that favored the developed countries, the GEF operates in such a way as to balance the interests of recipient and donor countries. The current system consists of two decision-making bodies; a general assembly made up of all participating countries that reviews GEF policies, and a Governing Council that is the GEF primary governing-body. Any decisions of the council require a simultaneous double majority; one consisting of 60% of the member countries and another consisting of 60% of all contributions. Despite this, developing countries complain of the general level of

funding and complex application process, which significantly delayed the award of grants (Soroos, 1999). For example, it is argued by critics of development lending that the fossil fuel investments by the World Bank outspend the entire GEF portfolio by 100:1 (Wysham, 1997). Other put this figure at 6:1 (Flavin, 1997).

3.3 The Mesoamerican Biological Corridor

The GEF is the main contributor to the world's most ambitious conservation effort. The Mesoamerican Biological Corridor (MBC) is also being funded in part by other agencies such as the UNDP, the German government, the World Bank, and the Danish aid agency DANIDA, as well as a host of NGOs and non-profit groups operating in the region. The Mesoamerican Biological Corridor (MBC), otherwise known as the *Paseo Pantera* ("path of the jaguar") is one of the world largest and most unique conservation efforts ever pursued. The MBC extends from northern Mexico to Columbia. It covers 0.5% of the Earth's surface and is home to more than 7% of its biodiversity. It was first formally endorsed by the 1992 *XII Reunion de Presidentes Centroamericanos Convenio Para la Coservacion de la Biodiversidad y Proteccion de Areas Silvestres Prioritas en America Central.* The GEF, the United Nations Environment Programme, and the United Nations Development Programme have contributed funds to the project with considerable input from the NGO and academic communities. These funds have gone to purchase lands, offer support for the establishment of fair trade coops, and teach farmers organic and shade grown growing methods that all fit the parameters of a of a sustainable development.

Critics (generally economic utilitarians) argue that projects similar to these are not a sustainable one because of the large sums of money required to keep them financially afloat. Global coffee corporations argue that these practices would contribute to higher prices, resulting in a decrease in demand. They argue that a decrease in demand would truly impoverish the rural farm economy. However, these are unsubstantiated claims.

3.4 The Role of Social Movements

Social movements play a large role in altering the ethics of society and the institutions that "represent" them. From grassroots campaigning to staging protests to lobbying government, social movements represent the changing of society's ideals. The fair trade, shade-grown, and organic coffee movements can be seen as being based on paradigms that differ from the strategy of economic utility employed by the major financial and development institutions. These movements have challenged market competitiveness based solely on price and sought out to decentralize the global agro-food system away from transnational corporations, thereby giving more autonomy to the local rural population. Part of their mission in this respect has been to reverse the trends of neo-liberal globalization.

More importantly, perhaps, are the many worldviews from which the specific policy theme has been endorsed. Global Exchange, for example, sees itself as a "human rights organization dedicated to promoting environmental, political and social justice around the world." Global Exchange has promoted TransFair USA, a nonprofit

certification organization, as a means to achieving fair prices in the coffee market for farmers. Not all of the TransFair USA products are shade grown or organic however. It only encourages environmentally friendly practices and the sustainable use of resources. The TransFair USA label only means that the farmer has received a fair price. However, 85% of fair trade coffee is shade grown and either passive or certified organic (Global Exchange, 2001).

The Rainforest Alliance has created the Conservation Agriculture Network that promotes the EKO OK certification. The label certifies typically small farms and promotes the conservation and recuperation of ecosystems on and near farms. This includes organic agriculture as well as biological diversity. Other groups like the Audubon Society and the Smithsonian Migratory Bird Center are also working on the same campaign. Of course, their focus is on the protection of canopy for bird habitat.

All of these groups accomplish similar ends, which all point to sustainability. The sustainable movement and their assortment of justifications have been given unprecedented authority in the GEF. The GEF is different from other institutions in that it allows the NGO community a place at the decision making table. This has resulted in the representation of a more holistic ethic with a broader regard of the biotic community in the philosophical foundations of policy imperatives. To some degree the GEF employs some sort of methodological pragmatism in their policy setting practice. They allow a multitude of justifiable means in the form of NGOs to accomplish the ends they seek.

CHAPTER 4

CONCLUSION

In order to justify sustainable policies in agriculture, the failures of productionism must be recognized. The mind set that brought the Dust Bowl, DDT, and the aerial spraying of glyposate must be abandoned for a more sustainable approach. However, deriving a policy that is sustainable is wrought with conflicts according to the literature of environmental ethics. In this thesis, a case for sustainable agriculture ethic, which seeks to balance the imperative of economy, nature, and society has been proposed.

Ethical arguments for the protection of natural systems often come under fire for their neglect of incorporating the role of social justice. 1.1 billion people now live in the world's 25 biodiversity "hotspots," areas described by ecologists as the most threatened species rich region on Earth and the population growth is twice the world average at 3.1 percent (World Resources, 2000). Many have called for the eviction of native peoples from their homelands deep in the forests for the sake of protecting nature. Ramachandra Guha among others criticize those calling for preservation of ecosystems without consideration of the human beings that inhabit them as being elitist. Take the example used in Katz's "Pragmatic Reconsideration of Anthropocentrism." It is an inhabited artifactual system. The economic costs of reverting it back to its natural state "would be astronomical." The same could be said of the indigenous groups and rural farmers. Though the translated financial costs

would be less, credence must be given to the extent to which those economic costs are socially constructed. The value of the homes of one group of people is not greater than another group. If anthropocentric concerns of farmers who make their livelihood from their practice are ignored, the ethic of agriculture could fall into the elitist trap Guha speaks of. This thesis has attempted to bridge that divide by employing a methodological environmental pragmatism in an attempt to clarify what a sustainable agriculture would look like in a coffee-producing region.

There are largely two philosophical conclusions. First, nonanthropocentrism claims basing the biotic community on natural systems implies the maximization of nature. Here the interests of nonanthropocentrism and sustainable agriculture conflict. Nonanthropocentrism pursues the policy that seeks to maximize nature defined as being natural. In this context, policies that promote full sun coffee are pursued in an effort to minimize the areas of instrumental human use. Adhering to the strict definition of the biotic community as being only natural is not holistic. It fails to take account the global ecosystem's parts that will interact with artifactual systems, the most significant of which is agriculture.

However, it is clear that the integrity and stability of the biotic community is further being disrupted by the globalization's intensification of agriculture. Coffee is a clear example of this, as the transition to full sun plantations has coincided with the loss of birds in the U.S. eastern deciduous forests to give one example (Askins, *et al.*, 1990). Fragmentation drastically alters the biological carrying capacity of ecosystems. Edges create places for invasive species to enter and reduce the habitat available for species that need to be deep in the thick. Agricultural systems require a more

integrated, holistic approach to protect biodiversity and buffer natural systems. This view requires that biodiversity and human autonomy be considered as well as more global aspects of production like the use of agricultural inputs.

Sustainable agriculture also requires a good deal of financial and institutional support in order to make the transition effective. Without any incentives or financial support, the legacy of the Dust Bowl will live on. Globalization has created a situation where farmers again are servicing debts (to pay for the full sun transition: tillers, hybrid seeds, and agro-chemical) to the industrialized world. Farmers have little incentive to conserve and nature is left to languish.

This leads to the second conclusion. That is, nonanthropocentrism does have interests that lie in artifactual systems. Therefore, a nonanthropocentrism that widens considerability to the biotic community beyond natural systems is required to meet the true needs of the biotic community. In this case, those needs are represented by the justifications for biological corridors.

Though sustainable agricultural systems are clearly artifacts, they are thoroughly intertwined with nature. If finding intrinsic value in nature is the only way to justify its preservation as nonanthropocentrism suggests, the same moral considerability (though not necessarily the same extent) must be extended to agriculture. In other words, agriculture needs to be recognized as a member of the biotic community. The maxim of the land ethic seems to fit well. A thing *is* right when it tends to preserve the integrity, stability, and beauty of the biotic community. Any treatment of agriculture that points toward the methods employed by

productionism fails in this manner. Productionism is intensive. It is fragmentary. It creates biological deserts such as those found on full sun coffee plantations.

This points to the need for clarification on the distinctions between artifacts and natural systems with regard to agriculture. As Katz (1999) suggests, these dualisms need to be viewed in non-absolutists terms. However, one should caution against being committed (mercilessly) to nonanthropocentrism in largely natural systems and making nonanthropocentric justifications irrelevant in artifactual ones. The main benefit of a sustainable agriculture, such as that promoted on shade grown farms, is the preservation or *augmentation* (by reclaiming lands from intensive farms) of stability, integrity, and beauty passed on to natural systems in the form of buffers and biological corridors. For agriculture, this can be accomplished if nonanthropocentrism expands moral duties to the biotic community and does *not* limit it to the natural one. Viewing natural and artifactual systems in non-absolutists terms allows for pluralism in values. Otherwise, arguments committed to nonanthropocentrism in natural systems are used against the advocates of sustainable agriculture by promoting a patchwork of fragmented natural systems as opposed to a holistic, integrated complex of natural systems and biological corridors[10].

The use of the Light's methodological pragmatism, as Katz suggests, is a useful tool for analyzing policy proposals. This method is particularly useful in analyzing the various justifications promoted by the ethical coffee trade movement. The power of this tool lies in recognizing its use as a public project. For ethical trade it allows the many positive contributions of their arguments that emanate from

different ethical foundations to find refuge under one umbrella. It allows effective communication between the consumer and producer appealing to the moral intuitions of both.

Since social movements play such a large role in the discourse of social and ecological interaction, it is necessary for the movements to not simply tolerate other justifications. Moreover, to achieve a broad basis of support they should embrace multiple arguments for environmental valuation as Light suggests. There are many environmental and sustainability topics on which rhetorical struggle is in need of good arguments. The limited resources available to organizations such as those in ethical trade coupled with the urgency of the ecological crisis and the speed at which globalization is changing the planet makes this suggestion all the more imperative. Agriculture is ultimately a place where economy, nature and society interact. The moral considerability of agriculture will ultimately define and shape the stability and integrity of the biotic community regardless of the dualisms upon which it is classified.

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[10] Of course, nonanthropocentrism would only suggest this if the area of natural systems in the former is greater than that of the later.

REFERENCES

Askins, R., R. Greenberg, and J. Lynch. "Declines of Birds in Eastern Deciduous Forests." Current Ornithology. 7, 1990: 1-57.

Avery, Dennis. "Defense of High Yield Farming." Today's Farmer. 1996: 45-47.

Avery, Dennis. "Saving Nature's Legacy Through Better Farming." Issues in Science and Technology. Fall, 1997.

Berry, Wendell. The Unsettling of America: Culture and Agriculture. New York: Avon, 1978.

Bierregaard, R.O., T.E. Lovejoy, V. Kapos, A. D. Santos, & R. W. Hutchings. "The Biological Dynamics of Tropical Rainforest Fragments: a Prospective Comparison of Fragments and Continuous Forest." Bio-Science. 42, 1992: 859-866.

Brennan, Andrew. "The Moral Standing of Natural Objects." Environmental Ethics. 6, 1984: 41-44.

Buckle, S., "Natural Law." in A Companion to Ethics. Singer, P. (ed.), Oxford: Blackwell Publishers, 1991: 161-174.

Callicott, J.B. "Animal Liberation: A Triangular Affair." Environmental Ethics. 2, 1980: 311-38

Callicott, J.B. "The Conceptual Foundations of the Land Ethic." in D. VanDeVeer & C. Pierce (eds.), The Environmental Ethics and Policy Book. London: Wadsworth Press, 1987: 184-198.

Callicott, J.B. In Defense of the Land Ethic: Essays in Environmental Philosophy. Albany: SUNY Press, 1989.

Carson, Rachel. Silent Spring. New York: Houghton Mifflin, 1962.

Cone, C. "Community-Supported Agriculture: A sustainable alternative to industrial agriculture?" Human Organization. 59 (3), 2000: 187-197.

Cronon, William. Changing in the Land: Indians, Colonists, and the Ecology of New England. New York: Hill and Wang, 1983.

Daly, Herman. "On Wilfred Beckerman's Critique of Sustainable Development." in D. VanDeVeer and C. Pierce (eds.), The Environmental Ethics and Policy Book. London: Wadsworth Press, 1995.

DePalma, A. "For Coffee Traders, Disaster Comes in Pairs." New York Times. 8 October 2001.

Elliot, Robert. "The Rights of Future People." Journal of Applied Philosophy. 6, 1989: 159-70.

Flavin, Christoher. "Banking Against Warming." World Watch. 6 1997.

GEF (Global Environment Facility). "Operating Strategy of the Global Environment Facility." [Article posted on GEF Web site]. Retrieved July 26, 2001 from the World Wide Web: www.gefweb.org/public/opstrat/ch2.htm

Global Exchange. "Global Economy Coffee Campaign" [Article posted on Global Exchange Web site]. Retrieved July 18, 2001 from the World Wide Web: http://www.globalexchange.org/economy/coffee/background.html

Greenberg, Russ. Birds over Troubled Forests. Washington, D.C.: Smithsonian Migratory Bird Center, 1998.

Guha, Ramachandra. "Radical American Environmentalism: A Third World Critique." Environmental Ethics. 11, 1989: 71-83.

Habermas, Jurgen. Legitimation Crisis. Boston: Beacon Press, 1973.

Hardin, Garrett. "The Tragedy of the Commons." Science. 162, 1968: 1243-48.

Hargrove, E. C. Foundations of Environmental Ethics. Englewood Cliffs, NJ: Prentice-Hall, 1989.

Harte, J. and R. Socolow. "Mineral King Goes Down Hill." Ecology Law Quarterly. 5, 1976: 555.

Harvey, David. Spaces of Hope. Berkeley: University of California Press, 2000.

Hoar, S. *et al.* (1986). "Agricultural herbicide use and the risk of lymphoma and soft-tissue sarcoma." Journal of the American Medical Association. 256, 1986: 1141-1147.

International Coffee Organization. "Table I-1 Total Production of Exporting Members." [Statistics posted on ICO Web site]. Retrieved July 20, 2001 from the World Wide Web: http://www.ico.org/statist/po2.htm

James, Deborah. (2000). "Justice and Java: Coffee and a fair trade market." NACLA Report on the Americas. 34 (2), 2000: 11-14.

Katz, Eric. "Organism, Community, and the Substitution Problem." Environmental Ethics. 7, 1985: 241-56.

Katz, Eric. "The Big Lie: Human Restoration of Nature." Philosophy and Technology. 12, 1992: 231-41.

Katz, Eric. "Artefacts and Functions: A Note on the Value of Nature." Environmental Values. 2, 1993: 223-32.

Katz, Eric. Nature as Subject: Human Obligation and Natural Community. Lanham: Rowman and Littlefield, 1997.

Katz, Eric. "A Pragmatic Reconsideration of Anthropocentrism." Environmental Ethics. 21, 1999: 377-390.

Krieger, Martin H. "What's Wrong with Plastic Trees?" Science. 179, 1973: 446-55.

Lamb, G. "Community Supported Agriculture: Can it Become the Basis of a New Associative Economy?" Threefold Review. 11, 1994: 39-43.

Light, Andrew. "Compatibilism in Political Ecology." in Light, A. and E. Katz. (eds.) Environmental Pragmatism. London: Routledge, 1996.

Light, Andrew. "Callicott and Naess on Pluralism." in Katz, E., A. Light, D. Rothenberg (eds.) Beneath the Surface: Critical Essays in the Philosophy of Deep Ecology. Cambridge: MIT Press, 2000: 125-148.

Light, Andrew. "Taking Environmental Ethics Public." in Environmental Ethics: Introductory Readings. Schmidtz, D. & E. Willott (eds.) Oxford: Oxford University Press, 2001.

Locke, J. Second Treatise of Civil Government. Oxford: Basil Blackwell, (1690) 1980.

Martinez-Alier, J. Ecological Economics: Energy, Environment, and Society. Oxford: Basil Blackwell, 1987.

Max Havelaar Belgium. "Café: D'ou vient le cafe Max Havelaar?" Retrieved October 20, 2001 from the World Wide Web: http://www2.maxhavelaar.com/fr/koffie/resultaten.html

McMichael, Phillip. "Globalization: Myths and Realities." Rural Sociology. 61 (1), 1996: 25-55.

Meadows, D. *et al.* The Limits to Growth. New York: Universe Books, 1972.

Merchant, C. Green Versus Gold: Sources in California's Environmental History. Washington, DC: Island Press, 1998.

Norton, Bryan. Toward Unity Among Environmentalists. Oxford: Oxford University Press, 1991.

Norton, Bryan. "Integration or Reduction: Two Approaches to Environmental Values." in Light, A. and E. Katz. (eds.), Environmental Pragmatism. London: Routledge, 1996.

Parfit, Derek. "Energy Policy and the Further Future: The Identity Problem." in Energy and the Future. MacLean, D. and P. Brown (eds.), New York: Rowman and Littlefield, 1983: 166-179.

Pimentel, D. *et. al.* "Conserving Biodiversity in Agricultural/Forestry Systems." BioScience. 42 (5), 1992: 354-362.

Ragsdale, N. & R. Kuhr. Pesticides: Minimizing the Risks. Washington, D.C.: American Chemical Society, 1987.

Raynolds, Laura. "Re-Embedding Global Agriculture: The International Organic and Fair Trade Movements." Journal of Agriculture and Human Values. 17, 2000: 297-309.

Redclift, Michael. "Sustainable Development: Managing the Contradictions." in Sklair, L. (ed.), Capitalism and Development. London: Routledge, 1987.

Reganold, J., *et al.* "Sustainability of Three Apple Production Systems." Nature. 410, 2001: 926-929.

Rice, P. and P. MacLean. Sustainable Coffee at the Crossroads. Washington, D.C.: Consumer's Choice Council, 1999.

Rich, Bruce. Mortgaging the Earth: The World Bank, Environmental Impoverishment and the Crisis of Development. Boston: Beacon Press, 1994.

Ricketts, Taylor H. "The Matrix Matters: Effective Isolation in Fragmented Landscapes." The American Naturalist. 158(1), 2001: 87-99.

Rolston III, H. Environmental Ethics: Duties to and Values in The Natural World. Philadelphia: Temple University Press, 1988.

Rothenberg, David, and Marta Ulvaeus. The World and the Wild: Expanding Wilderness Conservation Beyond its American Roots. Tuscon, Arizona: University of Arizona Press, 2001.

Santa Clara County v. Southern Pacific Railroad. 1886. 118 U.S. 394.

Saunders, D. A., R. J. Hobbs, & C. R. Margules. "Biological Consequences of Ecosystem Fragmentation: A Review." Conservation Biology. 5, 1991: 18-32.

Schmidtz, D. "Natural Enemies: An Anatomy of Environmental Conflict." Environmental Ethics. 22 (4), 2000.

Sen, Amartya. Development as Freedom. New York: Anchor Books, 1999.

Shiva, Vandana. "The Greening of Global Reach." The Ecologist. 22 (6), 1992.

Simon, Julien. The Ultimate Resource. Princeton: Princeton University Press, 1981.

Solow, R. "Sustainability: An Economists Perspective." in D. VanDeVeer. ans C. Pierce. (eds.) The Environmental Ethics and Policy Book. London: Wadsworth Press, 1993: 450-455.

Sonnenfeld, D. "Mexico's 'Green Revolution,' 1940-1980: Towards an Environmental History." Environmental History Review. 16 (4), 1992.

Soroos, M. "Global Institutions and the Environment: An Evolutionary Perspective." in Vig, N. and R. Axelrod (eds), The Global Environment: Institutions, Law, and Policy. Washington, DC: Congressional Quarterly, 1999.

Stone, Christopher. Should Trees Have Standing? Towards Legal Rights for Natural Objects. Portola Valley, CA: Tioga Publishing, 1974.

Thompson, Paul. The Spirit of the Soil: Agriculture and Environmental Ethics. London: Routledge, 1995.

Tillman, D. "Environmental Impacts of Agricultural Expansion: The Need for Sustainable and Efficient Practices." Proceedings of the National Academy of Sciences USA. 96, 1999: 5995-6000.

TranFair Canada. "Fair Trade at a Glance." Retrieved November 1, 2001 from the World Wide Web: http://www.transfair.ca/tfc/glance.html

VanDerMeer, John, & I. Perfecto. "The Agroecosystem: A Need for the Conservation Biologist's Lens." Conservation Biology. 11(3): 591-592.

VanDerMeer, John., *et al.* "Global Change and Multi-species Agroecosystems: Concepts and Issues." Agriculture, Ecosystems, and Environment. 67, 1998: 1-32.

VanDeVeer, D. & C. Pierce, (eds.), The Environmental Ethics and Policy Book. Belmont, CA: Wadsworth Publishing Co, 1998.

WCED, (World Commission on Environment and Development.) Our Common Future. Oxford: Oxford University Press, 1987.

World Resources 2000-2001. People and Ecosystems: The Fraying Web of life UNDP, WRI, World Bank, UNEP, 2000.

Wysham, D. *et. al.* The World Bank and the G-7: Changing the Earth's Climate for Business. Institute for Policy Studies and Sustainable Energy and Economy Network. Washington, DC, 1997.