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**PLURALISM, SCIENCE, ETHICS, AND THE INTERSECTING
SPHERES OF SOCIAL CONCERNS AND ENVIRONMENTALISM**

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Christopher B. Barrett and Raymond E. Grizzle

ABSTRACT

This paper builds on alternative perspectives offered by the environmental and sustainability traditions to advance a holistic yet practical conceptual model that explicitly integrates social and environmental concerns. Ours is a pluralistic approach founded on synthesis. Employing the economic concept of path dependence, we emphasize that there exist multiple paths society can follow in environmental ethics and policy, but that once one has been chosen, implicitly or explicitly, there may be little opportunity to reverse such choices. Hence, the importance of process to the pursuit of social and environmental objectives.

PLURALISM, SCIENCE, ETHICS, AND THE INTERSECTING SPHERES OF SOCIAL CONCERNS AND ENVIRONMENTALISM¹

The search for an appropriate balance between the satisfaction of human needs and desires and the protection of the extra-human environment has been at the core of environmental issues at least since the beginning of the modern environmental movement. In recent years, however, such discussions seem to have become increasingly obscured as distinct environment-related movements have emerged and gained strength. Our sense is that activists and scholars concerned about “environmentalism,” “social sustainability,” “sustainable development,” “environmental justice,” etc. often talk past, or not at all with, those of a different persuasion. Consequently, we are trying to move everywhere at once, ultimately going nowhere. Mainstream environmental movements in wealthy industrial economies largely ignore social justice issues while poor communities struggling against the yoke of poverty care little about global warming or holes in the ozone layer. We don’t exhibit much commitment to sit down together to search for intersecting objectives, to map out a path toward “our common future” (WCED, 1987). We believe that more explicit consideration of the multiple perspectives on humanity’s relationship with the broader environment can help focus and advance the search for environmentally sustainable policies. Such are the concerns of the first section of this paper, which advances a holistic ecological approach that explicitly integrates social and environmental concerns. Ours is a pluralistic approach founded on synthesis.

¹We thank the John D. and Catherine T. MacArthur Foundation, the Global Stewardship Project of the Pew Charitable Trusts, Taylor University, and the Utah Agricultural Experiment Station for support, Matt Klein for research assistance, and Paul Rothrock, Dick Squiers, and participants at the sustainable Societies Workshop at the University of Minnesota for helpful comments. The usual disclaimer applies. This paper was approved as UAES journal paper 4889.

The paper's second section emphasizes why it is important to identify and promote a holistic ecological approach to environmental protection. Here we employ the economic concept of path dependence, emphasizing that there exist multiple paths society can follow in environmental ethics and policy but once one has been chosen, implicitly or explicitly, there may be little opportunity to reverse such choices. We then explore what a holistic ecological approach means for the design of sustainable environmental protection policies, and how it can be used to assess the sustainability of different policy regimes, drawing on experiences from both high-income and low-income countries.

Before getting to the substance of the paper, let us be clear about our motivations. We are personally very concerned about global environmental conditions in the broadest sense. By this we mean we are concerned about pollution, habitat degradation, species loss, and other environmental issues. But we are equally concerned about social problems like preventable disease and malnutrition, armed conflict, excessive population growth, etc. Our overall complaint with environmentalism is we feel that the interconnections between environmental and social concerns have been given superficial treatment. The fact that our species is obviously largely to blame for the earth's problems seems to have caused some to adopt a broadly anti-human perspective, whether explicitly or not. We feel that this is a major mistake, strategically and morally. Theologically, it is akin to hating both the sin and the sinner instead of just the sin. Moreover, we consider the contemporary environmental debate, at least in the industrial countries, excessively polarized, devolving too often into a struggle between pro- and anti-environment camps each possessing remarkable political power and wealth. Marginalized groups (e.g., poor human communities or unprotected species) are too often left out.

The newer literature on “sustainability,” while lacking a clear theoretical foundation, goes well beyond biocentric or ecocentric² environmentalism to integrate social concerns with environmental objectives. Our objective in this paper is to build on the alternative perspectives offered by the environmental and sustainability traditions to offer a holistic yet practical conceptual model. We have struggled to synthesize our concerns about contemporary environmentalism into a simple model, to highlight the risks of the present, confrontational approach centered around the industrial world, and to outline what may prove a more durable, effective and socially just approach. Efforts already underway in some places offer insights on our holistic ecological approach to environmental protection, from which industrial nations might learn useful lessons. Perhaps the required synthesis among ecologists, economists, social scientists, theologians, ethicists, and others is too much to accomplish? We hope and believe not.

I. Environmentalism and Ethics: Humanity’s Relationship With Nature

Environmental science textbooks typically include a chapter on ethics which often consists of an expanded discussion of two extreme positions: pro- or anti-environment. Terms like “frontier” vs. “environmental” ethics or “throwaway” vs. “sustainable earth” worldviews are sometimes used to label the extremes.³ This stylized representation in introductory texts symbolizes what we consider a disturbing tendency toward polarization in the academic and policy debates surrounding environmental policy. We believe this both reduces the likelihood of successful interventions to ensure necessary, long-term environmental protection and increases the

²Biocentrists focus on species, in the limit valuing all species equally. Ecocentrists operate at a more macro scale of analysis, focusing on ecosystems and in the limit valuing all ecosystems equally.

³See, for example, Miller's text (1994, pp. 683ff) and Chiras (1994, pp. 494ff). See Oelschlaeger (1994, p.3) for a similar criticism of such simplistic “binary opposition” perspectives.

likelihood that any successful interventions will come only at serious human cost. This section explains those concerns and offers an alternative perspective on the contemporary environmental debate.

We start from the recognition that while perhaps all creatures are equal according to some philosophical assessments, not all have equal influence over the course of history. In this important sense our analysis is anthropocentric, in that we explicitly acknowledge the disproportionate power of humanity to impose its will on the environment and thereby to influence the future path of the whole ecosystem, humanity included. Indeed, this highlights a subtle irony: it is humanity's awesome power over creation that motivates even the most ardently biocentric of environmental analysts. Humanity is both within nature (in biophysical terms) and above it (in decision-making authority).

If humankind wields disproportionate power over ecosystem dynamics, one must grapple with how people fit in to the broader environment. What motivates, or could motivate, human beings to make decisions in a way that is consistent with environmental protection? This is really the core question of environmental ethics.

There are at least three distinct perspectives on this issue. We believe the intersection of the three begets a holistic ecological approach worth advancing explicitly. First, some scholars emphasize human's dominion over nature and treat the nonhuman environment as a bundle of natural resources to be managed and exploited for maximal human gain. This view, especially as captured in natural resource economics, tends to be heavily anthropocentric ethically and methodologically. This heavy anthropocentrism is qualitatively different than that we espouse, for it emphasizes not only man's decision-making powers, but, more, it values human welfare

exclusively. This enrichment can come through the generation of monetary income through resource exploitation, of pleasure through amenities use, or of psychic utility through the existence of ecosystems in their natural state. The key to this line of thinking is that environmental protection is purely a means to the ends of human utility maximization, and thus is not always worth pursuing. The ecosystem has only instrumental value, not intrinsic worth.

There is a second, rather different anthropocentric view of humanity's place in the environment. This view focuses not on welfare development so much as on the satisfaction of basic human needs. The metric of analysis is consequently more complex. Distinguishing between human needs and desires is obviously a tricky enterprise, and we do not attempt a precise distinction here. But drawing on the "basic human needs" literature in international development (e.g., Streeten et al. 1981), the emphasis here falls on ensuring all humans enjoy adequate standards of nutrition, health, shelter, water and sanitation, and education. Where such standards are not attained, the basic human needs approach asserts that redressal of such problems is a moral and economic priority. Social justice and civil rights movements represent this perspective. The human needs approach tends toward agnosticism with respect to the environment. Where nonhuman species pose threats to the satisfaction of basic human needs (e.g., elephants that trample crops, malarial mosquitoes), social justice activists tend to oppose environmental protection measures. African opposition to the CITES ivory ban and widespread refusal by developing country governments to ban chemical insecticides partly reflect such thought. On the other hand, social activists favor environmental protection where it contributes to the satisfaction of human needs. Those oriented towards human needs satisfaction thus tend to favor measures to clean up urban water supplies and to dispose of solid waste in an environmentally sound and

sanitary manner. This worldview is distinct from the first sort of anthropocentrism in that social activists assert the moral imperative of care for marginalized communities—a “preferential option for the poor” in the current language of the Roman Catholic church—and reject the cost-benefit analysis that would guide the decisions of the first sort of anthropocentrist.

The polar opposite of these two anthropocentric positions, of course, is the extreme biocentric perspective in which human needs are not considered at all and the objective is to maximize the preservation of ecosystems in as “pristine” (meaning minimally affected by humans) a condition as possible. Many contemporary environmentalists fall in this area, especially advocacy movements like Earth First!. Duly recognizing the historical subjugation of the earth and its nonhuman resource to human material desires, some seek “justice,” that humans stop doing harm to nature. Absolute preservation of nature is a standard often advanced by bio- and ecocentrists, implying all of creation (including malarial mosquitoes, AIDS and Ebola viruses, etc.) is worth preserving. So just as social activists of the second group mobilize for the defense of underprivileged human subpopulations, this biocentric perspective motivates a subpopulation of humans to come to the defense of marginalized nonhuman species. Of course, anthropocentrists defuse biocentric critiques by noting that economists believe the value people place on the existence or use of resources in their natural state increases sharply with income, i.e., environmental protection is a luxury good.⁴ The heavy anthropocentrists thus claim, with some justification according to their worldview, that biocentrists seek not justice but to impose the will of the wealthy on the rest of humanity.

⁴Luxury goods are those for which demand increases at a rate faster than income, i.e., the income elasticity of demand is greater than one.

Contemporary debates over environmental policy, especially in the industrial world, often appear a contest between diametrically opposed camps, e.g. the “ecology-economics” dilemma (Nash, 1991). But is such conflict always necessary? Must there always be a struggle between “pro-environmentalists” and “anti-environmentalists”? Of course there will always be differences of opinion and therefore conflict in consensual policy choice. The objectives of different people never coincide entirely. Indeed, not only do interests not overlap fully, but myopic pursuit of any one of these goals—human enrichment, the satisfaction of basic human needs, environmental protection—often has adverse effects on one or both of the others.

The particular form of industrial growth in the twenty-five years following World War II has obviously had adverse spillover effects on the environment (e.g., atmospheric acid deposition, water pollution, and toxic waste disposal), and many believe it has likewise degraded the satisfaction of basic human needs for underprivileged groups within industrial and pre-industrial economies (Gutierrez, 1973; NCCB, 1986). Less commonly recognized, but no less true, are the negative consequences for environmental protection and economic growth of some strategies for the satisfaction of basic human needs (e.g., Cambodia's experiences under Pol Pot, Tanzania's under *ujamaa*). Perhaps least well-recognized are the adverse effects of some forms of environmental protection on economic well-being and the satisfaction of basic human needs. For example, Conover et al. (1995) estimate that wildlife-related incidents (e.g., deer-car or bird-aircraft collisions, bites) account for approximately 75,000 human injuries, more than 400 human deaths, and economic losses of roughly \$3 billion annually in the United States. Meanwhile, Norton-Griffiths and Southey (1995) estimate that Kenya sacrifices 2.8 percent of GDP annually to conserve biological diversity through protected parks, forests and nature

reserves, while 30 percent of its population remains mired in abject poverty. Hence, the overwhelmingly negative attitudes toward protected areas by Kenyans living in close proximity to parks; they strongly favor degazetting such lands to permit agricultural production for subsistence cultivation (Akama, Lant, and Burnett, 1995).

Economists use the term “externalities” to describe such situations, in which the full costs of a choice are not borne by the decision-taker. Externalities result in socially inefficient individual decision-making and, in some cases, outright harm done to disenfranchised persons and species. In this important sense, satisfaction of the anthropocentric and biocentric perspectives described above are co-requisite to each objective. No one can be satisfied indefinitely without satisfying the rest. In other words, each objective—the advance of economic welfare, meeting basic human needs, and maintenance of ecosystem health—has both intrinsic and instrumental value.

Economists' standard answer to the problem of externalities is to internalize them by one of two means. The first option is to move decision-making authority to a higher level, encompassing both the original decision-taker and those affected secondarily. Quite aside from the undistinguished history of command-and-control approaches to environmental regulation (Hill, 1994), there exists the more fundamental problem that no authority credibly and equitably represents all species, places and generations. Not only is there no world human government, there is certainly no clear mortal master of the universe. The conglomeration of all parties under one decision-making authority is not feasible with respect to issues transcending space, species, and time.

The second approach to internalizing externalities follows from the Nobel prizewinning Coase theorem, which demonstrates that, in the absence of transactions costs and in the presence of a complete set of property rights, markets will create appropriate incentives for individuals to resolve externalities freely through market transactions. Incentive-based approaches to environmental protection—most commonly taxes or transferable property rights—emphasize the need for accountability for the consequences of one's actions. The problem arises that transactions costs are real and insuperable across species, generations, and, sometimes, cultures. If those to whom one must be accountable cannot transact, economic incentive-based approaches fail to resolve the externality problem (Asheim, 1994; von Amsberg, 1995).

If economists' usual solutions to the problem of externalities will not do the trick, what then? Note that the core objective behind either economic approach to resolving externality problems is to make decision-makers accountable to society for the consequences of their acts either through government or the market. We submit that one can replicate this result by combining peer-reviewed (natural and social) scientific inquiry, pluralistic legal and political mechanisms to limit the power of any individual or group, and ethics. Science identifies paths through which distinct goals can be mutually supported. Ethics builds a case for choosing such strategies over others which might yield more gains for one constituency but less for one or more of the others. Pluralism ensures that all perspectives can be voiced. We do not mean to idealize pluralism, science, or ethics, but rather to point out the inherent complementarity of the three.⁵ The light of scientific scrutiny and participatory processes tends to induce greater adherence to

⁵For example, what we know and how we interpret our knowledge depends fundamentally on both our individual ethics and our collective rules of interaction, which together determine the power relations in society. Pluralistic rules and individual ethical commitments to pluralism provide a check on specious science.

ethical standards. A commitment to truth and open public scrutiny improves scientific discovery (hence, replication and peer review). An ethic of cooperation and substantive, scientific input helps keep participatory processes from devolving into chaos. Thus, like many before us, we believe that science can be complemented by ethics and that modern ethical studies can likewise benefit from closer contact with the social and natural sciences and that the process of deliberation is important to this integration.⁶ Hence, our advocacy of a “holistic ecological” ethic that respects the divergent views of the different parties to the debate, which we have crudely summarized into the three camps defined above. By imposing a “do no harm” standard—that advancement toward one goal not set back the others—this is a pluralistic ethic emphasizing the search for common ground based on a shared understanding of the interrelationship between different species and subpopulations of species.⁷

Science helps us to uncover that common ground. Norton (1991) points out that a consensus of sorts has already emerged among environmentalists on how we should be treating nature, based on widespread acceptance of various components of ecological theory along with a common desire to protect nature to some extent, if often for different reasons. For example, bird watchers and duck hunters both agree on the protection of wetlands, even though at least some members of these two groups would strongly disagree on other questions concerning nature. Agreement is based on the fact that ecological studies show that ducks and other birds are dependent on wetlands, and both groups value ducks. So, among environmentalists, broadly

⁶For an economist’s perspective on this see Sen (1987).

⁷Platteau (1994a, 1994b) has analogously emphasized the importance of “generalized morality” to the establishment of efficient capitalist markets, where all market failures cannot be fully resolved by government authority or by the careful definition of property rights.

some level of consensus involving value judgements already exists, based largely on ecological science.

Scientific discovery alone will not suffice, however, since the fundamental problem is the existence of externalities which cannot be reconciled through any mechanism—whether government- or market-based—if humans act purely out of self-interest. The articulation and promotion of suitable, pluralistic institutional procedures, and environmental ethics are equally important to the productive resolution of disputes over environmental protection.⁸ Most fundamentally, ethical standards are necessary because of the wildly unequal distribution of decision-making power within the ecosystem: a small subpopulation of a single species (*Homo sapiens*) wields unusual power to exercise unchecked discretion. Any given generation of human beings, much less a subset of a generation, cannot be held accountable by future generations or nonhuman species no matter the human governance authority mandated to do so nor the property rights and material incentive schemes introduced. However, in the presence of a behavioral ethic to which individuals subscribe, people do become accountable: to their conscience, their God, or whatever the source of their ethics. Only then do people freely undertake profit-sacrificing environmental stewardship that can improve economic efficiency by reducing environmental externalities (Colman, 1994). Many people clearly hold such an ethic already. A central objective of environmental protection movements must be to define and promote a holistic ecological ethic so as to enlarge the population which values environmental protection and the satisfaction of basic

⁸See Lillieholm and Romm (1992) for a description of a pluralistic approach that seems to be succeeding in New Jersey's Pinelands National Reserve.

human needs sufficiently to generate an environmentally and socially sustainable society.

Participatory decision-making processes are a requisite, institutional step in that direction.

This paper further develops a previously proposed model (Norton, 1991, 1992; Grizzle, 1994; USEPA, 1994b) that might lead to more consensus among both environmentalists and the population at large on environmental issues. Our basic conceptual model (Figure 1) depicts the three worldviews described earlier as intersecting spheres in order to capture the simultaneous existence of both (i) means for advancing individual goals that are injurious toward one or both of the other goals, and (ii) cooperative strategies that can advance multiple goals. This is an expansion of the two-component (environmental protection and economics) approach that is commonly used, especially in industrialized countries. In section II we discuss several efforts, in both high-income and low-income countries, toward enacting the sort of ecological policies favored by our three-compartment model.

We consider ours a "holistic ecological" or "humble anthropocentric" ethic because it explicitly recognizes and respects the individual objectives while focusing on their interaction and the need to protect the whole system, not just its privileged, or particular underprivileged, components. Humankind is central to the biophysical world, both above and within it, because we occupy a unique place of authority in that system but depend on it fundamentally. Yet because individual humans exhibit idiosyncratic preferences, suffer limited cognitive capacity, and are fallible, it is unlikely that any individual or subgroup could or would pursue a balanced path. Only a pluralistic process can deliver environmental protection consistent with legitimate social concerns. This emphasis on pluralism yields the holism or humility of the ethic we espouse.

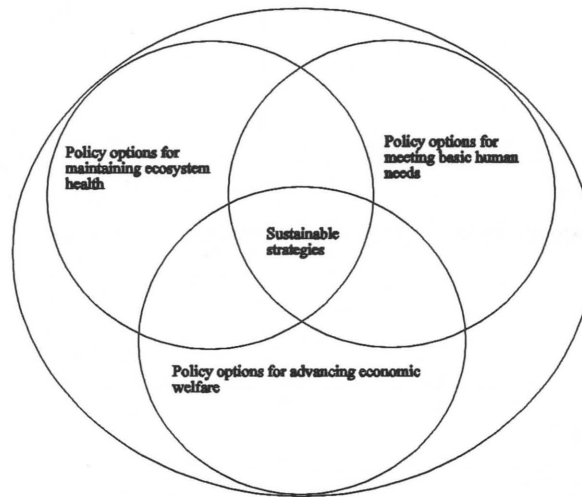


Figure 1: Three-compartment model.

Choices over environmental policies are typically portrayed as pitting maintenance of ecosystem health against advancing economic welfare. Human needs are implicitly presumed to be reducible to economics. The relationship of economic welfare to the satisfaction of basic human needs has long been recognized as weak (Streeten et al., 1981; Sen 1987; UNDP, 1995). Given this inadequacy of the orthodox, a two-part environmental model, we propose a three-compartment model (Figure 1), which adds basic human needs explicitly as not only more accurate for many current contexts but perhaps essential for the long-term success of environmentalism.⁹

Our three-compartment model nests competing human objectives within a single sphere (represented two-dimensionally as a circle) and requires the formal consideration of the legitimate goals of meeting basic human needs, maintaining ecosystem health, and advancing economic welfare in the development of environmental policy. Where policies are designed and

⁹An initial version of this is found in Grizzle (1994) and draws on the contextualism of Norton (1991, 1992).

implemented at the intersection of multiple subspheric goals, they at least avoid imposing negative externalities on the intersecting goals and possibly advance both simultaneously. We thus label policies that intersect all three policy objectives as “sustainable” strategies, in recognition that they are consistent with distinct but equally legitimate concerns.¹⁰ The pursuit of sustainable strategies requires careful scientific appraisal of alternative approaches, participatory deliberation, and the cultivation of an environmental ethic that favors the identification and pursuit of holistic ecological strategies. Failure to do so risks system collapse, the rate of which accelerates with the radius in Figure 1. In other words, the further a policy is from the area of intersection, the more serious the negative externalities involved and the sooner the system collapses.¹¹

Before pressing on to discuss experiences in integrating two or more of these goals into environmental action plans, let us address three anticipated objections. Perhaps foremost among the objections to such a formal consideration of human needs is that many environmentalists seem to feel that economic advancement and human needs satisfaction have, for far too long, been just about the only thing considered in human interactions with nature. The history of industrial development shows a shameful disregard for environmental protection and, thus, major environmental degradation. Moreover, the specter of the catastrophic damage that appears nearly certain in the face of the burgeoning human population growth globally suggests that human needs are, on some scale, already being met to excess. Many seem to feel that it is pay-back time

¹⁰This consistency can be of either strong or weak varieties. Strong consistency advances all goals simultaneously. Weak consistency does no harm to any goal and will thus include strong consistency as a proper subset. To maximize the set of sustainable strategies, we invoke weak consistency based on a “do no harm” standard.

¹¹This is one way to understand the marked difference between eastern Europe and North America in rates of environmental deterioration due to heavy industrial discharge. Both regimes were environmentally unsustainable in the long run but clearly not to an equal degree.

(Bookchin, 1986; Ehrenfeld, 1993; Hardin, 1993; Ehrlich and Ehrlich, 1970; Sessions, 1995).

While we share many of the concerns raised in the environmentalist literature, we are concerned that unless human needs are formally brought into the decision making process, environmental protection itself will suffer, and there is really little chance for long-term success in saving the earth (Perrings, 1989; World Bank, 1992; Boyce, 1994; Karshenas, 1994; Barrett, 1995b). The recent resurgence in antienvironmental publications perhaps reflects the lack of balance in contemporary environmentalism.¹²

This leads to the second, related objection we expect to face: the feasibility of our belief that one can reconcile economic advancement, the satisfaction of basic human needs, and environmental protection. Since this question is itself a subject deserving of a paper much longer than this one, we make just a few simple points in our defense. As Hammond (1995, p. 10) points out, "[human] carrying capacity is dependent on technology and social organization and hence changes over time . . . the relation of economic growth to consumption, and of consumption to environmental harm, is more complex, and more context-specific, than might first appear." The emerging empirical evidence is that the maintenance (even improvement) of ecosystem health is consistent with economic growth (Antle and Heidebrink, 1995; Grossman and Krueger, 1995). There is a strong case to be made that the satisfaction of basic human needs contributes directly to the protection of particular environmental resources (e.g., forests, soils, water, wildlife) that are commonly overexploited in poor communities (Perrings, 1989; World Bank, 1992; Barrett, 1995b, forthcoming; Hammond, 1995). Finally, there is considerable empirical and theoretical

¹²There have been outspoken "anti-environmentalists" (e.g., Julian Simon) since the beginning of the modern environmental movement. A recent resurgence of such rhetoric includes a group of "environmental optimists," some of whom seem bent on destroying environmentalism through confrontation. Wright (1995) discusses this trend.

evidence that economic growth can improve the lot of the poor, satisfying basic human needs (UNDP, 1995), contrary to the claims of Marxist and neo-Marxist scholars that economic growth leads deterministically to the underdevelopment of peripheral nations and the impoverishment of marginalized subpopulations. The empirical and theoretical evidence suggest that the three subspheres we depict in Figure 1 do indeed intersect.

The final natural objection to our conceptualization is that none of the three objectives we lay out in Figure 1's separate spheres has a clear definition. We concede that operationalizing the three concepts—basic human needs, economic welfare and ecosystem health—will be the subject of legitimate, technical dispute and must be context-sensitive. But such definitions can be made and our model then operationalized. Shively (1996) provides an example of this, albeit not motivated by our model.

II. Promoting A Holistic Ecological Ethic: Finding The Right Path

While the evidence suggests ecosystem protection, basic human needs satisfaction and economic welfare objectives can be mutually compatible. Perhaps the major obstacle to pursuit of the holistic ecological approach we advocate is the absence thus far of a sustainable strategy. Such a strategy would certainly correspond to the vague notion of "sustainability" occupying center-stage today in developing countries (WCED, 1987; Barrett, 1995b, forthcoming), but the operationalization of the concept remains frustratingly elusive.¹³ This reflects primarily our

¹³We exclude the "sustainability" debate of wealthy, industrial economies, which are largely another variant of heavy anthropocentrism, articulating concern over intergenerational equity for the heirs of the contemporary middle and upper classes. Hence, the debate's focus on appropriate discount rates, environmentally sensitive national accounts, and the substitutability of human-made for natural capital. Notions of social justice or the intrinsic value of the nonhuman elements of the ecosystem rarely find significant expression in this literature. See Solow (1992) for an excellent, compact summary of these debates.

continued poor understanding about the complex web of interrelationships that link all species (including humans) in a community. This ignorance leads to disbelief in the existence of a common ground and to intolerance of others' world views. While no sustainable strategy has clearly emerged, there have been and presently exist several strategies based on the intersection of two of the three objectives. These bilateral alliances promise a broader political support for and a less injurious set of policies. Our concern is that many of these are a siren's call of sorts, and it can be difficult to shift from one path to the other. It is thus critical that environmentalists employ pluralism, science, and ethics to search carefully and critically for a holistically ecological approach to environmental protection. This section makes the case for careful and critical scientific review.

It might seem an attractive intermediate step to pursue policies compatible with any two of the three objectives depicted in our model, and, to a certain extent, that may be true. Only through designing and experimenting with strategies that seem to show promise do we discover whether a policy approach lies at the intersection of all three spheres, any pair, or is not at an intersection at all. It is important that we thus emphasize up front that we do not oppose pursuit of intermediate strategies on an experimental basis and a modest scale. We are, however, extremely concerned that in peoples' enthusiasm to find a durable solution we do not collectively dive head first into a mirage from which it can be difficult to extricate ourselves.¹⁴

The principle risk involved in following a strategy compatible with only two of the three objectives is the path dependence of policy and technology. The concept of path dependence

¹⁴This is our concern about integrated conservation and development projects (ICDPs) in the low-income tropics. These are quite appealing conceptually, but implementation remains flawed thus far. Vast sums are nonetheless flowing rather uncritically into ICDPs (Barrett and Arcese, 1995, 1996).

derives from two sources: (1) the existence of positive feedback effects associated with fixed costs,¹⁵ economies of scale,¹⁶ learning effects,¹⁷ or any combination of these, and (2) the existence of alternative choices at some juncture. Path dependence emphasizes that at any point in time there exist multiple feasible approaches to achieving a particular set of objectives, but these approaches compete for resources. Moreover, the triumph of one path over others becomes self-sustaining in that its efficiency increases endogenously as its acceptance spreads. Turning back thus becomes especially costly and unlikely and development strategies become canalized.¹⁸

We anticipate path dependence in the articulation and dissemination of environmental ethics or in policy formulation. Most people find it difficult to value several competing ethics simultaneously; there is a large degree of exclusivity to one's ethical beliefs. And once one has grown comfortable with a particular ethical system, it is often quite difficult to shift to another system.¹⁹ Policies likewise create their own constituencies, not least of which are the officials tasked with implementing a policy and the policy's beneficiaries. We are thus concerned that unsustainable strategies, and the ethical codes that give rise to them, become difficult to reverse once strongly supported.

¹⁵In particular, with irrecoverable fixed costs, often called sunk costs.

¹⁶Economies of scale are present when a uniform expansion of input quantities generates a disproportionately great increase in output. This implies average costs fall with output.

¹⁷Learning effects occur when doing something improves one's efficiency at that something. This leads to externalities economists label "learning by doing" (Arrow, 1962).

¹⁸Path dependence is particularly associated with the development of technologies, such as the QWERTY typewriter keyboard (David, 1985), light-water nuclear reactors, or the gasoline engine (Arthur, 1989). It has also been used to explain geographic patterns of industrialization (Krugman, 1995), environmental decline (Goodstein, 1995), and policy choice in agrarian economies (Barrett, 1995a).

¹⁹Hence, the current furor in the United States over "values-based" education and the prominent place of personal trauma in inducing shifts in individuals' ethical beliefs.

Consider, for example, the economic development strategies in vogue during the early post-World War II years, which emphasized industrialization, the transfer of economic surplus from agriculture to industry, and the central place of the state in managing economic growth. Countries attaining independence during this period—disproportionately from Africa and South and Southeast Asia—tended to follow a statist approach to development which helped bring both environmental and social crises. Reversing the spiral of agricultural and environmental degradation, rapid population growth and sociopolitical instability is proving difficult in most of these nations.²⁰

We thus predict that the greatest success will likely emerge from multiple, simultaneous, experimental approaches that keep bets on any single strategy modest until its ramifications are reasonably well understood. Having established the design, implementation, and results of an approach, policy makers can then reinforce success. In this way path-dependence can be used toward positive ends, with success becoming self-sustaining. There is anecdotal evidence of this occurring in U.S. watershed management as state departments of natural resources try multiple-management regimes, then move most (if not all) sites over to the approach that brings the best results, thereby spatially extending and institutionally deepening the sustainable strategy.

The world has witnessed a number of attempts at combining two or more of the spheres in our model, none of which has yet proved effective. Figure 2 replicates the earlier three-compartment model, adding labels to each of the four areas of intersection. We now consider these in turn, in order to see what might be learned from these past and current experiences.

²⁰Cleaver and Schreiber (1994) develop this theme in detail for sub-Saharan Africa.

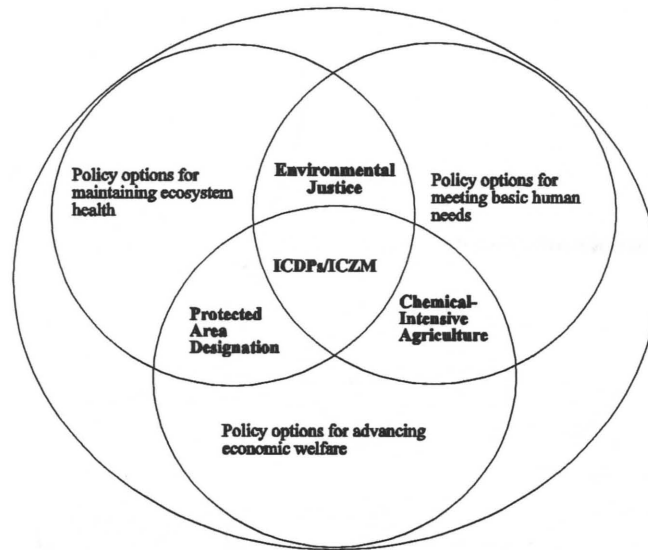


Figure 2: Alternative policy paths.

One of the most common sorts of environmental protection in high income nations is the designation of protected areas. The gazettement of lands for parks, the conversion of multiple-use lands into wilderness areas, etc., are motivated by both environmental preservation objectives and economic demand for pristine areas, which, as we mentioned earlier, tends to come disproportionately from economically secure subpopulations. Protected areas designation, sometimes referred to by managers as the “fences and fines” approach, is a good demonstration of a policy approach that supports two distinct objectives yet may have negative spillover effects on the satisfaction of basic human needs. For example, an unprecedentedly detailed study of the potential impacts of proposed wilderness designation in Utah (Snyder et al., 1995) reveals that the major beneficiaries of wilderness designation appear to be relatively young and wealthy recreationists resident in urban and suburban areas. Most of those benefits are generated by transferring income and resources from rural areas where economic opportunities are already

limited and basic social indicators (e.g., infant mortality, literacy rates, life expectancy) are relatively low. This also explains the uniform opposition of Utah's native American populations to wilderness designation.²¹ Once approved, however, wilderness lands are well nigh impossible to reclaim for the populations who previously enjoyed multiple-use access to them. Hence, too, the widespread resentment of impoverished rural Kenyans to parklands (Akama, Lant and Burnett, 1995).

There have been similar alliances among other pairs. For instance, many environmentalists consider the rise of chemical-intensive agricultural production systems—whether in the United States or in the Asian “Green Revolution”—an environmental disaster. Increased chemical inputs to agriculture, particularly in the low-income tropics, was motivated by a belief that economic growth and poverty alleviation could be jointly advanced through improved agricultural technologies. Historically, unprecedented yield improvements in maize, rice, and wheat helped fuel rapid economic advancement and improved living standards among the poor in many Asian economies and has helped raise U.S. farm incomes above national averages, helping reduce American rural poverty. But now many analysts claim that excessive use of chemical inputs and multiple cropping have overtaxed soils and the water table, leading to salinization and contamination that are difficult to reverse.²²

²¹The tribal councils of southern Utah, where most of the proposed wilderness areas are located, publicly support a zero wilderness policy. Apparently confirming the native American leaders' fears, the lone hospital within 150 miles of the massive Navajo reservation in the state's southeastern corner has now announced it is closing due to insufficient public financial support.

²²There is also evidence emerging that chemical use may have undone the positive social effects of more and cheaper food by poisoning water and soils as well as farm workers and their families (Antle and Pingali, 1994).

The third example we offer is of the environmental justice movement. In the wake of the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, there has been considerable movement toward promoting policies that lay at the intersection of a human needs and a biocentric approach to environmental protection. Emerging concerns about environmental justice are perhaps the most prominent manifestation of attention being paid to human needs in the environmental debate in industrial nations. Environmental justice has been defined by the U.S. Environmental Protection Agency as

the fair treatment of people of all races, cultures, incomes, and educational levels with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment means that no population of people should be forced to shoulder a disproportionate share of the negative environmental impacts of pollution or environmental hazards due to a lack of political or economic strength (USEPA, 1994a).

The Environmental Justice Movement (EJM) has been formed through a nexus of civil rights (or social justice) and environmental protection activists. In the U.S., the EJM asserts that lower socioeconomic classes and minorities are often exposed to greater levels of environmental pollution, including lead poisoning, air pollution, contaminated water, and exposure to contaminants from Superfund sites. Thus, civil rights and environmental activists have recently realized that they share a common problem; the problem of the inequitable distribution of environmental protection by race, ethnicity, and socioeconomic class.

Initially, EJM focused on the spatial distribution of solid waste management facilities (Bullard, 1983), including hazardous waste landfills (USGAO, 1983; UCC, 1987), incinerators, and Superfund sites (UCC, 1987; *National Law Journal*, 1992). Currently, the EJM has evolved into an eclectic body of grassroots groups that weave both social and environmental concerns into

matters of not merely locational aspects of solid waste facilities but also enforcement, permitting public participation and sustainability (Bryant, 1995). Therefore, EJM now focuses not only on the ends or outcomes but also the means or procedures of seeking justice. EJM confronts considerable opposition, however, from politically powerful constituencies understandably concerned about the cost of rectifying these injustices and the drag cleanup might place on economic growth.²³ Perhaps a coupling of EJM with fighting excess consumerism in industrial nations will yield greater success.²⁴

The aforementioned strategies—protected areas designation, chemical-intensive agriculture and the environmental justice movement—are valuable in that they teach us much about the uncertain boundaries of the areas of intersection among the three compartments in our model. The principles behind a holistic ecological strategy probably come closest to being realized in the integrated conservation and development projects (ICDPs) currently in vogue in the developing world and in integrated coastal zone management (ICZM) efforts in the U.S.

While we have been quite critical of the present design of ICDPs (Barrett and Arcese, 1995, 1996), they properly couple conservation with relieving endemic poverty and social problems in human communities and fostering economic growth in the host region. ICDPs “aim to achieve conservation goals by promoting development and providing local people with alternative income sources that sustain rather than threaten the flora and fauna in natural habitats”

²³As yet unpublished World Bank findings from low- and middle-income countries find clear international evidence of environmental injustice. The Bank finds that the principal correlate of environmental injustice is education level and communities' capacity to organize politically not income levels (Wheeler, 1996).

²⁴Along with a host of philosophical arguments, not least of which Aristotle's ethic of human flourishing, this is based on the observation that, even among economists, the most material of social scientists, consumption does not equate with well-being (Crocker, 1995).

(Munasinghe, 1994, p. 27). ICDPs have emerged to replace the old “fences and fines” approach to protected area conservation, which often punished the poor for animal poaching or slash-and-burn cultivation. They involve quasicontractual arrangements wherein residents of communities on the periphery of a protected area surrender access to, or curtail illegal offtake of, native species and their habitats in exchange for alternative sources of income and sustenance. At their best, ICDPs are highly participatory, community-based exercises in establishing and maintaining a shared commitment between conservation professionals, development specialists, and impoverished communities to respect and promote each others’ objectives (West and Brechin, 1991; Wells, Brandon, and Hannah, 1992; Western, Wright, and Strum, 1994). Such initiatives are relatively new and have generally been enthusiastically embraced by environmental managers, although there are indications of problems in several respects that raise doubts about particular designs’ long-term effectiveness as sustainable strategies (Wells, Brandon, and Hannah, 1992; Brandon and Wells, 1992; Barrett and Arcese, 1995, 1996). Still there are multiple, context-driven designs for ICDPs that, in aggregate, constitute a major, promising range of experiments toward identifying sustainable strategies.

In the U.S., an existing environmental management approach that appears to fall into the intersection of all three spheres of our model is the Integrated Coastal Zone Management (ICZM) program. In his comprehensive handbook, Clark (1966, p. 2) describes ICZM as “. . . a *unitary program*—it has to both manage development and conserve natural resources and, while doing so, it has to integrate the concerns of all relevant sectors of society and of the economy. Also it is most important that coastal economic development be generated for the people of a country, not just for those who are already rich and powerful.” An important implication of ICZM is that

existing laws do not necessarily have to be altered in order to move to a more holistic form of management. It may only be necessary to better coordinate their implementation. This is particularly relevant for the situation in industrialized countries like the U.S. with extensive environmental legislation which consists of a wide diversity of sometimes narrowly focused laws.

ICDPs are the only example of which we are aware of policy efforts that explicitly adopt an ecological ethic holistic enough to be respectful of the distinct world views of different community members and the needs to search for and seize on a common ground among those world views. At the very least, ICDPs might be viewed as the first pragmatic steps in this direction; at the best, the most successful ICDPs may provide transferable lessons in how to cultivate and implement a holistic ecological ethic among global human communities.

III. Conclusions

Contemporary environmentalism in the industrial world—among policy makers, academics, and the public at large—is caught in an unfortunate, confrontational struggle between heavily anthropocentric (“save it so we can use it”) and extremely biocentric (“all species are of equal worth”) world views. Ecologically, however, humans as a species have a much broader range of relationships to other species than purely adversarial. We, like others before us, argue that fuller consideration of the complex relationships within humankind and between humans and other species leads to a more holistic ecological ethic than one typically witnesses in the environmentalism of the contemporary industrial world. A holistic ecological ethic respects the different world views, recognizes the potential for mutually compatible strategies, and seeks them out. This approach places considerable responsibility on science, participatory decision-making

systems, and pluralistic ethics to foster both the search and support for common ground capable of resolving contemporary and prospective environmental crises, domestically and globally.

In the U.S., there has been a consideration of human needs in some major pieces of federal- and state-level environmental legislation, particularly for laws that deal with public health issues. However, there has been very little consideration of human needs in other kinds of environmental legislation (e.g., endangered species act, wilderness designation). Moreover, there has been no serious debate on exactly how human needs should fit into an environmental ethic that might form an overall basis for public policy.

In contrast to the situation in industrialized countries, environmentalists in developing countries increasingly view human needs as a clear priority. Many view "care for the environment" more in the context of meeting human needs because of the manifest necessity of human development in poor societies. This contrast is strikingly displayed by comparing the *U.S. Endangered Species Act* with the recent Convention on Biological Diversity drafted as part of the 1992 Earth Summit held in Brazil. Part of the reason why our *Endangered Species Act* has been in trouble politically is because it so adamantly reflects an extreme biocentrist view where all species are considered to be of equal value. In contrast, the preamble of the internationally adopted Convention on Biological Diversity states: "Economic and social development and poverty eradication are the first and overriding priorities of developing countries." We believe industrial countries can learn much about a holistic ecological and sustainable approach to environmental protection from low-income countries.

As partly reflected in ICDPs and ICZM, an ethic relating humankind to the environment holistically has been addressed more concretely as part of recent international meetings sponsored

by the United Nations (e.g., the 1992 biodiversity treaty mentioned above). The 1994 and 1995 International Conference on Population and Development, held in Cairo and Beijing, respectively, articulated a variety of ethical positions related to human population control and environmental protection. While these issues are contentious and remain far from resolved, we are heartened by the explicitness of the struggle to identify humanity's multifaceted relation to nature.

Nearly everyone is really concerned about the environment. Likewise, nearly everyone is really concerned about the satisfaction of basic human needs and economic advancement. Differences among us are primarily in the direction and levels of concern. Yet none is inherently superior to the others, and, without integrating the three fundamentally inextricable objectives into a holistic ecological ethic, it becomes dangerously easy to succumb to ultimately unsustainable ethics and policies.

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