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**A HOLISTIC APPROACH TO SUSTAINABILITY BASED ON PLURALISTIC
STEWARDSHIP**

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Abstract: This paper advances a holistic ecological approach based on a three-compartment model. This approach favors policy initiatives that lie at the intersection of the three major areas of concern common to most environmental controversies: environmental protection, provision of basic human needs, and advancing economic welfare. In support of this approach, we propose a "pluralistic stewardship" integrating core elements of anthropocentrism, biocentrism, and ecocentrism. After presenting the basics of our model, we then explain why it is important to identify and promote a holistic ecological approach to sustainability. 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.

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A Holistic Approach to Sustainability Based on Pluralistic Stewardship

Bryan Norton argues that a consensus is emerging among environmentalists on how to treat nature.¹ That consensus is based on widespread acceptance of much ecological theory and a common desire to protect nature to some extent, if for different reasons. For example, bird watchers and duck hunters both advocate protection of wetlands, even though many members of these two groups may strongly disagree on other environmental questions. Their conditionally common cause is based on shared valuation of ducks (albeit for different reasons) and mutual acceptance of ecological studies showing that ducks and other birds are dependent on wetlands. There is growing recognition that consensus among communities exhibiting quite different values is emerging from increasingly widespread acceptance and understanding of ecological science and of participative decision-making.

Consensus does not, however, extend throughout the range of environmental controversy. Consequently, Norton has pursued the notion of "contextualism" as an explicit attempt at integrating socioeconomic and environmental concerns, which are commonly pitted against one another in sustainability debates. This paper extends Norton's and others' arguments for a pluralistic approach to achieving consensus and resolving controversies about environmentally sustainable development. The first step is to recognize the multiple aims within the community of stakeholders. Thus in section one we identify distinct objectives pursued by different parties to contemporary environmental policy debates, further refining a previously proposed conceptual model.² Identification of multiple interests leads directly to the second section of the paper,

wherein we review the distinct major value systems underpinning different objectives in contemporary debate over sustainability. In an important sense, the language of value systems, or “centrisms”, is itself a source of controversy, in which anthropocentrists, biocentrists and ecocentrists are too often unnecessarily pitted against one another. As we discuss in the second section, two distinct, albeit connected, senses of centrisms, are commonly confounded in contemporary debate. Distinguishing among these more clearly may help the various parties to sustainability debates find common ground.

In the third section we introduce our notion of holistic “pluralistic stewardship.” We argue the importance of pluralistic stewardship, invoking the economic concept of path dependence, which emphasizes that there exist multiple paths society can follow in environmental ethics and policy, but once one has been followed there may be little opportunity to reverse course. The too-often confrontational approach evident in the contemporary industrial world creates considerable risks; we believe there exists a more durable, effective and just approach. In closing, we briefly discuss a promising initiative that fits the spirit of pluralistic stewardship.

I. Intersecting Concerns in the Contemporary Sustainability Debate

We consider the contemporary sustainability debate 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, unprotected species) are too often left out. An objective of this paper is to promote a more consensual approach to conceptualizing and pursuing environmentally sustainable human societies.

A broadly acceptable definition of “sustainable development” is notoriously elusive. As Lélé points out, “the concept of sustainability originated in the context of renewable resources

such as forests or fisheries, and has subsequently been adopted as a broad slogan by the environmental movement.”³ The common denominator beneath any serious definition of sustainable development includes (i) the maintenance of ecological conditions necessary to maintain an ecosystem supportive of human life, and (ii) some notion of intergenerational equity, i.e., that current generations cannot expend so much natural capital as to leave future generations predictably worse off than contemporary folk. For many people, including us, sustainable development is somewhat more expansive, also depending upon (iii) achievement and maintenance of social cohesion among humans, based on mutual respect, care and justice, to maintain a social system supportive of human life, and (iv) safeguards to protect the intrinsic value and associated collective biotic rights of extrahuman creation. This is both a conceptual and an empirical point.

The crux of the challenge to making environmentally sustainable policy is thus the reconciliation of different communities’ divergent interests in ecosystem maintenance and intragenerational and intergenerational distribution. One can crudely distinguish between three categories of relevant human concerns commonly expressed in most debate about sustainability: protecting the natural environment, advancing economic welfare, and providing basic human needs.⁴ Some people are concerned that human overexploitation of the natural environment ultimately threatens human survival (although such instrumental aims may not be the only reason for advocating environmental protection).⁵ Others argue that some depletion of natural resources is inevitable, and therefore that economic growth is necessary to stimulate savings and thereby the accumulation of manmade capital that is (at least partly) substitutable for natural capital so as to ensure that future generations enjoy at least the same standard of living prevailing today.⁶ Still others decry the inattention paid to intragenerational distributional issues in the previous two

perspectives.⁷ Their concern is that environmental protection and economic growth can be exclusive, injuring either nonhuman elements of the biosphere or today's poor to benefit future human generations descended from today's elites.

Pursuit of any one of these goals generally affects each of the others, due primarily to feedback effects, as we discuss later in this section. Areas of intersection among these distinct, if crudely defined, concerns capture the existence of strategies that can advance all three objectives simultaneously. Meanwhile, there also exist approaches that advance one or perhaps two concerns at the expense of the other concern(s). The latter class probably best represents the modal approach to environmental policy in the twentieth century, in which environmental protection and/or basic human needs provision have often been sacrificed at the altar of aggregate economic growth. One can thus envision a Venn diagram comprised of three intersecting spheres, each representing a different one of those three stylized concerns. This builds on a similar, two-component approach, based on environmental protection and economics, already on offer.⁸ The expansion to a third dimension is necessary because social scientists and philosophers have long recognized the relationship between economic welfare and the satisfaction of basic human needs to be weak.⁹ Neoclassical economic welfare arguments largely ignore distributional issues, tending toward utilitarian assessments that celebrate aggregate growth.¹⁰

Myopic pursuit of any one of the three goals in our simple heuristic often has unforeseen adverse effects on one or both of the others. And those adverse effects often have subsequent contagion effects on the initial goal due to the inextricability of human distributional questions, economic growth and environmental protection. For instance, the particular form of industrial economic growth pursued in the twenty-five years following World War II has had adverse (and generally unanticipated) spillover effects on the environment (e.g., atmospheric acid deposition,

water pollution, and toxic waste disposal). Many believe it has likewise degraded the satisfaction of basic human needs for underprivileged groups within industrial and pre-industrial economies.¹¹ Moreover, in places like the former Soviet Union and the transition states of eastern Europe, the adverse environmental effects of a previous generation's myopic pursuit of economic growth are now coming back to retard economic growth.

Less commonly recognized are the adverse effects of some forms of environmental protection. For example, the western "fences and fines" approach to wildlife conservation and parks management has largely failed to safeguard biodiversity in rural Africa and has imposed a significant cost in terms of foregone economic growth and reduced standards of living among communities on the peripheries of most protected areas. In Kenya alone, 2.8 percent of GDP is spent annually to conserve biological diversity through protected parks, forests and nature reserves, while 30 percent of its population remains mired in abject poverty and communities around protected areas overwhelmingly favor degazetting those lands to permit agricultural production for subsistence cultivation.¹² Among poor, rural Africans one too commonly hears western environmentalists referred to as "green imperialists".

Economists label situations in which the full costs (or benefits) of a choice are not borne by the decision-taker "externalities". Actions to advance economic welfare, basic human needs provision, or environmental protection often create externalities. Externalities result in socially inefficient decision-making and, in some cases, outright harm done to disenfranchised persons and species. Where there are feedback effects, as certainly seems the case in the interaction of human and nonhuman systems in the biosphere, satisfaction of different objectives appears co-requisite to the lasting achievement of any one objective. In other words, each objective—environmental protection, the advance of economic welfare, and meeting basic human needs—has both intrinsic

and instrumental value. Especially because we poorly understand the complex feedback loops within human societies and between human society and the extrahuman environment, failure to view the environmental challenge in a holistic fashion often sows the seed of failure. Holism is necessary to sustainability.

While there may be *negative* externalities to the myopic pursuit of one or two of these goals, exclusive of the other(s), there also appear to be *positive* externalities associated with pursuing the three goals in unison. Advocates from different perspectives can learn from each others. This is likely to yield increased information availability and probability of success in achieving each goal, as well as reminding people of — and thereby reinforcing — shared values. Cooperative pursuit of multiple objectives can yield large dividends.

Economists' standard answer to the problem of externalities is to internalize them by one of two means. The first standard option from economics is to move decision-making authority to a higher level, encompassing both the original decision-taker and those affected secondarily. Command-and-control approaches have occasionally been successful, but have generally proved ineffective means of environmental regulation. Moreover, there exists the fundamental problem that no authority credibly and equitably represents all species, places and generations. Not only is there no world human government, there is no mortal entity capable of perfectly managing the biosphere. The conglomeration of all parties under one decision-making authority is not feasible with respect to issues transcending space, species, and time. Selective regulation can be and has been effective, but government authority is not a magic bullet to externalities problems.

The second approach to internalize externalities follows from the Coase theorem, which states that in the absence of transactions costs and in the presence of a complete set of property rights, markets will induce individuals to resolve externalities through voluntary transactions. On

this basis there has been much recent excitement for market solutions like tradable permits. Incentive-based approaches to environmental protection— i.e., taxes or transferable property rights— properly emphasize the need for accountability for the consequences of one’s actions. The problem arises, however, that transactions costs are insuperable across species, generations, and, sometimes, cultures. If those to whom one must be accountable cannot transact, market incentive-based approaches fail to resolve externality problems fully.¹³ Moreover, the economic (Pareto) efficiency of market exchange is predicated on a socially acceptable *ex ante* distribution of rights within and across generations. The valuation of environmental and resource services and stocks varies considerably with hypothetical changes to the intergenerational distribution of property rights.¹⁴ But we haven’t institutional or legal mechanisms for assigning and protecting future generations’ rights, so it is not at all clear that one should accept partial (in the sense that there is no intergenerational market) market equilibria as either economically efficient or just.

Decision makers (in business, conservation groups, government, etc.) commonly ignore or are indifferent to others’ perspectives. Hence they too often fail to choose mutually beneficial paths. A surplus of negative externalities and a shortage of positive ones results. The challenge of sustainability arises from the limitations of the two textbook economics approaches to resolving externalities. Where fundamental differences of fact, value or attitude divide interested parties to environmental debates, there is no technocratic solution. Other means must be found to hold decision- makers accountable to society for the consequences of their actions and to reconcile diverse perspectives. There must be institutions beyond — not in place of — governments and markets.

We see a primary role for (natural and social) scientific inquiry, open popular discussion of principles of justice, and pluralistic legal and political mechanisms to limit the power of any

individual or group. Science can identify the true nature of the sustainability challenge by improving our understanding of the complex web of natural-social interdependence and by identifying prospective paths through which distinct goals can be mutually supported. Science can check demagoguery and foolishness. So can widespread popular discussion of principles of (distributive and procedural) justice, thereby building a case for choosing mutually acceptable 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 pluralistic institutions, science, or moral philosophy, but rather to emphasize the inherent complementarity of the three and the necessity of looking to extragovernmental and extramarket institutions for support in achieving sustainable societies.¹⁵ The light of scientific scrutiny and participatory processes tends to induce greater adherence to ethical standards. A commitment to truth and open public scrutiny improves scientific discovery. A widespread commitment to procedural and distributive justice and substantive, scientific input helps keep participatory processes from devolving into chaos. Science can be complemented by ethics and modern ethical studies can likewise benefit from closer contact with the social and natural sciences. Participative political processes are important to this integration. Hence, our advocacy of a holistic approach emphasizing the search for common ground based on a shared understanding of the interrelationship between different species and subpopulations of species.¹⁶

Science can help uncover common ground (e.g. Norton's consensus argument), but scientific discovery alone will not suffice, since the fundamental problem is the existence of externalities which cannot be reconciled through any mechanism—whether government- or market-based—if humans do not consider the full range of legitimate interests beyond their own. The articulation and promotion of suitable, pluralistic institutional procedures, and environmental

ethics are equally important to the productive resolution of environmental controversy. Most fundamentally, clear standards of justice are necessary because of the wildly unequal distribution of decision-making power; a small subpopulation of a single species (*Homo sapiens*) wields unusual power to exercise unchecked discretion within the ecosystem. However, in the presence of an ethic to which individuals subscribe, people do become accountable: to their conscience, their God, or whatever the source of their ethics. Empirical evidence indicates that people then freely undertake profit-sacrificing environmental stewardship that reduces environmental externalities.¹⁷ 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 human needs sufficiently to generate an environmentally and socially sustainable society. Participatory decision-making processes are a requisite, institutional step in that direction.

Our three-compartment model suggests that for policies to be sustainable in the long-term, they must formally and simultaneously consider the legitimate goals of protecting the environment, meeting basic human needs, and advancing economic welfare. Where policies are designed and implemented at the intersection of multiple goals, they at least avoid imposing negative externalities on the intersecting goals and likely advance all three simultaneously. Policies that intersect all three policy objectives are not only holistic and pluralistic, but they are also far more likely to prove sustainable.¹⁸ The further a policy set is from the area of intersection in our imaginary Venn diagram, the more serious the negative externalities involved and the higher the probability of nearer-term system collapse.

Before concluding the section, let us address an anticipated objection. Some would challenge our belief that one can reconcile pursuit of economic welfare, the satisfaction of basic

human needs, and environmental protection. This question deserves a paper much longer than this one, so we do not attempt a complete treatment here. Instead, we make just one fundamental point in our defense: there is enough evidence of mutual reinforcement among these goals, under some all policy designs, to cast reasonable doubt on the counterclaim that the area of intersection among the three is an empty set. We certainly have much to learn about which approaches lie at the heart of the Venn diagram, but there is considerable empirical evidence to support the claim that the maintenance (even improvement) of ecosystem health can be consistent with economic growth.¹⁹ Similarly, there is both empirical and theoretical evidence that the satisfaction of basic human needs contributes directly to the protection of environmental resources (e.g., forests, soils, water, wildlife) and that economic growth can improve the lot of the poor and satisfaction of basic human needs. On balance, the empirical and theoretical evidence suggests our three stylized spheres of interest indeed intersect, but by no means fully.

II. Value Systems and Sustainability

The simple Venn diagram model described in the preceding section provides a way of visualizing and reconciling the multiple mundane objectives involved in contemporary debates about sustainable development. Given complex feedback mechanisms within human societies and between human society and the natural environment, the most holistic and pluralistic approaches appear most sustainable in practice. There is an important parallel in environmental ethics. A holistic and pluralistic approach to value systems may likewise help foster sustainable human societies, especially since widespread acceptance of and respect for ethical standards is central to resolving the difficult externalities problems involved in seeking sustainable paths of human development, as argued in the previous section.

This section briefly summarizes the four dominant value systems found in contemporary environmental discourse. An objective in this section is to show that there is probably more common ground between opposing camps than is commonly recognized. We will then argue in section three for a holistic, pluralistic approach to value systems in sustainability debates.

Environmental ethical perspectives may be classified in a variety of ways. One common dichotomous division is between monistic and pluralistic approaches. In the limit, monists search for central principles that form the basis for a unified ethic from which all moral judgements can be derived. Pluralists, meanwhile, explicitly recognize as valid a variety of approaches and ethical frameworks which can be used to address moral issues. Therefore, pluralists commonly arrive at moral judgements in less structured ways.²⁰ In a recent critique of the monistic approach, which often seems to dominate mainstream environmentalism, Norton concludes: "...if a monistic theory is to account for all environmental obligations, it must account for the differences, as well as the similarities, in treatment that should be accorded differing elements of nature. To deny this will be to homogenize environmental policy, ignore irreconcilable conflicts of interest in nature, and insist that one ontologically grounded moral theory applies throughout the universe."²¹ We concur that a pluralistic approach embracing a wide range of underlying perspectives — including monist ones — is essential for addressing sustainability controversies in the real world. Indeed, we argue in the next section that given imperfect information about the universe and the future and in recognition of human error and finitude, only pluralistic approaches are feasible. Moreover, and paradoxically, pluralism might better accommodate the ultimate aims of many monists better than non-pluralistic processes because of the problems of imperfect human agency.

The monism-pluralism axis is but one dimension of the environmental ethics literature. Another distinguishes among three distinct ethical perspectives: biocentrism, ecocentrism, and

anthropocentrism.²² One well-represented view within mainstream environmentalism currently is biocentrism. Perhaps the most influential statements of biocentric thought can be found in the writings of Paul Taylor.²³ His "biocentric outlook" consists of four major beliefs which can be summarized as: (i) humans are members of the Earth's community; (ii) all species are integral elements in a system of interdependence; (iii) all organisms are centers of life, each pursuing its own good; and (iv) humans are not inherently superior to other living things. We maintain that only the fourth belief is problematic to most opponents of biocentrism. Moreover, when considering the "priority principles" Taylor proposes for resolving conflicting claims among species, belief four may not even be necessary. In like manner, others have argued that some components of "biocentric" beliefs can be held by those who do not consider themselves biocentrists. For example, Hargrove notes that even though the notion of "intrinsic value" for living things (as opposed to conceiving of them only in instrumental terms) has been identified primarily with biocentrism, it can also be a part of other perspectives.²⁴ Biocentrism is not fully disjoint from anthropocentric or ecocentric perspectives; there is an important area of intersection.

The second major perspective is ecocentrism, essentially an expansion of "life-centered" biocentrism to include abiotic components of the environment. Ecocentrism offers a perspective that emphasizes systemic values, caring less about individual life forms than about their interactions. Ecocentrism has partly evolved out of biocentrism, but it also can be traced to Aldo Leopold's "land ethic."²⁵ Ecocentrists share biocentrists' belief in the intrinsic worth of non-human elements of the biosphere. By emphasizing interactions, however, ecocentrists also share anthropocentrists' instrumental valuation of the natural environment. Ecocentrism thus shares

important common ground with both biocentrism and anthropocentrism, even if proponents' of each sometimes clash.

The final perspective is "anthropocentrism", or "human-centered" valuation.

Anthropocentric thought has dominated moral philosophy for nearly all of its history.

Anthropocentrism comes in at least two varieties that differ markedly: "strong" and "weak".²⁶

"Strong" (or "heavy") anthropocentrists emphasize human dominion over nature and treat the nonhuman environment primarily as a bundle of natural resources to be managed and exploited for maximal human gain. This is the view that is captured in much of natural resource economics. In the strong anthropocentric tradition, the moral value of things is reducible without remainder to the value it creates for human beings, whether through the generation of monetary income through resource exploitation, or of pleasure through amenities use or simply knowledge of the existence of ecosystems in their natural state. In this view, 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. While many environmentalists may abhor this view, it can be reconciled in practice (albeit not in theory) with biocentric, ecocentric and weak anthropocentric approaches, in analogous fashion to our opening example of duck hunters' instrumental valuation of wetlands preservation.

"Weak" (or "broad" or "longsighted") anthropocentrism, by contrast, focuses not on immediate human gratification so much as on the satisfaction of basic needs for the whole human community, present and future, and maintenance of the ecosystem of which we are a part. The metric of analysis is consequently more complex. As in the "basic human needs" literature in international development,²⁷ the emphasis here falls on ensuring all humans enjoy adequate standards of nutrition, health, shelter, water and sanitation, and education. Somewhat more

generally, Sen's capabilities and freedoms approach captures the essence of this concern to try to provide all persons, across space and time, with the capabilities to choose to (not) satisfy basic human needs.²⁸ Weak anthropocentrists, like ecocentrists, tend to pay attention to the complex interactions between and dynamics of human societies and natural environments. Given uncertainty about dynamics and interactions, the weak anthropocentric approach often favors caution with respect to resource exploitation ("safe minimum standards"), sometimes best expressed in the emerging field of ecological economics. Moreover, like ecocentrists and biocentrists, weak anthropocentrists often ascribe intrinsic value to nature. But, where nonhuman species threaten the satisfaction of basic human needs (e.g., elephants that trample crops, malarial mosquitoes), weak anthropocentrists may oppose environmental protection. African conservationists' opposition to the CITES ivory ban and widespread refusal by developing country governments to ban chemical insecticides partly reflect such thought. Weak anthropocentrists like Norton therefore oppose the homogenization of environmental policy implied by monist thought.

The weak anthropocentrist worldview is distinct from the strong version in that social activists assert the moral imperative of care for marginalized communities — which might include unrepresented future generations. It also generally rejects the cost-benefit analysis — especially the sort that discounts future costs and benefits — that guides strong anthropocentrist decision-making, and they acknowledge nature's intrinsic value. The weak anthropocentrist position is perhaps best understood as a systemic one with a weak preferential option for humanity. We are sympathetic to this worldview.

Too often commentators emphasize the differences between these distinct ethical traditions, not their similarities. For instance, undergraduate environmental science textbooks

typically include a chapter on ethics that juxtaposes extreme positions. Terms like "frontier" vs. "environmental" ethics or "throwaway" vs. "sustainable earth" worldviews are sometimes used to label the extremes.²⁹ This stylized representation symbolizes and perhaps feeds what we consider a disturbing tendency toward polarization in academic and policy debates on environmental policy. This makes genuinely inclusive and pluralistic processes more difficult to maintain, even as it becomes more obvious that authentically participative approaches are central to achieving sustainable societies.

III. Pluralistic Stewardship

In an important sense, the language of value systems, or "centrisms", is itself a source of the controversy, in which anthropocentrists, biocentrists and ecocentrists are too often unnecessarily pitted against one another. There are indisputably important differences between these perspectives in what things are deemed morally considerable. But respecting the differences between different parties is not an argument against seeking consensus, or what Norton calls "contextualism." Indeed, in this and the next section we argue that the optimal approach to environmental policymaking is one that respects the different foci of alternative centrisms without yielding to the subordination of all to any one, i.e., a pluralistic approach.

Niebuhr suggests a useful distinction between centrisms that (1) indicate ultimate values that are to take priority in cases of conflict, i.e., a "priority focus," and those that (2) reflect the scope of the values to be represented in inquiry and normative assessment, i.e., a "scope focus."³⁰ This is a subtle but crucial and commonly overlooked distinction, on which we build our case for pluralistic stewardship. Our empirical claim is that virtually all people are in practice pluralists, appealing to a variety of low level general principles to justify or criticize choices. Individuals

recognize and employ an assortment of scope-focused centrism but do not consistently subscribe to any one priority-focused centrism. Rather, they tend to choose paths that permit them to reconcile distinct values they hold simultaneously. If this view is accurate, why demand of a population what few, if any, of its members practice in their individual choice patterns? Instead of emphasizing the competition between centrism and attempting to find a set of ordered principles that allows univocal resolution of value conflicts, why not seek first to identify and pursue perhaps abundant common ground? This question is the core motivation for the pluralistic stewardship we espouse.

A core common belief of (almost) all who are concerned about the environment is that humanity must “steward” the natural world. The question of for whom we steward these gives rise to sharp differences of opinion, but the general notion of stewardship is common to all the world views we have described.³¹ Where participants focus on this common ground, mutually desirable progress can be made. We submit that all parties’ objectives will be better served if more attention is paid to the “how” questions of stewardship in practice and process, and less to the “for whom” questions. Put differently, we believe the centrism discussed in the previous section should be considered Niebuhr’s scope-focused centrism that declare what their adherents believe counts morally, not priority-focused centrism that ultimately rank alternative courses of action.

Within the biosphere only humankind is capable of exercising and acting on moral judgements. Environmental valuation and policy making is thus immutably anthropogenic, although not necessarily anthropocentric. The whole of creation cannot represent itself in the ongoing human debate about our relationship with nature. Instead, people champion the cause of other species and of the biosphere’s abiotic components, and reasonable people disagree about the

nature of the interactions and dynamics of the biosphere's constituent systems. Humans' extraordinary cognitive skills and moral nature endow us with an ability and a responsibility to exercise choice on behalf of a broader universe of biotic and abiotic elements. In this important, practical sense, all debate about sustainability is anthropogenic, for environmental controversy reflects the scope of values articulated by human agents acting on behalf of both themselves and nonhuman principals. The challenge of sustainability arises primarily because of limited human appreciation of (i) the roles of nonhuman species and abiotic elements in complex ecosystems and (ii) our own delicate place in these systems, which do not exist for our satisfaction so much as for our stewardship and because of limited mechanisms for ensuring a morally defensible human relation to nature. Hence "conservation", a word with insightful etymology: "con-", meaning "together" and "servare", meaning "to keep". Together we keep the biosphere; we are its stewards. And in togetherness, common ground takes precedence. We may disagree amongst ourselves as to what entities have greater moral value, but we must not let these disagreements obstruct our pursuit of paths that satisfy a variety of perspectives.

At this point, let us briefly digress to make plain our own perspective on environmental ethics. We subscribe to the weak anthropocentric view that although humans are not exclusively valuable, as implied by strong anthropocentrism, neither are they of equal value with all other species, as suggested by biocentrists. For a variety of reasons, including humans' unique capacity and responsibility to steward the rest of creation, the value of humankind is superior to that of otherkind. Moreover, because all components have value, so too do they possess rights, but "biotic rights are not the same full set of rights that humans enjoy or equal rights with humans."³² Values and rights derive from what Nash labels "ecological relationality", a contextual approach that considers both the intrinsic and the instrumental values of all creatures, the latter based

especially on the corporate interests of the ecosystem.³³ The complex ecology by which biotic and abiotic elements are related physically necessarily relates them morally. Furthermore, the integrated whole of the biosphere has a reality independent of and greater than the sum of its parts. Yet while we as individuals are attracted primarily to the weak anthropocentric perspective, we see a need for other perspectives to accompany ours at decision making tables.

If one recognizes and appreciates the complex interactions of various biotic and abiotic elements in the functioning of the ecosystem, we submit that one ought likewise to recognize and appreciate complex interactions among scope-focused centrism in the anthropogenic project of stewarding the biosphere. Just as biodiversity is necessary to preserve the richness of the physical environment, we put forward the corollary that diversity of value systems might be equally essential to preserve the richness of the moral and spiritual environment which motivates humanity to take proper care of the biosphere.³⁴ The reality of the whole is comprised of multiple parts and perhaps multiple explanations and dynamics, none of which alone allows humankind to approach complete understanding. We therefore advocate a *practice* of pluralistic stewardship because no mortal being knows fully how to protect the whole biosphere. Successful stewardship therefore requires the interaction of multiple value systems that collectively ensure reasonably holistic choice by constraining the range of decision-makers' choice. An environmental monist implicitly places great faith in the capacity of a human decision maker to understand and follow the ultimate principle. The irony is that these same environmentalists routinely point to human ignorance leading to anthropogenic environmental degradation, even while holding great expectations of humanity's ability to understand and act upon an ultimate principle applied to unimaginably complex systems. We are less sanguine, believing the biosphere too complex to be well understood by humans any time soon, and humans too fallible to be trusted unconditionally.

Hence the practical need for pluralistic stewardship, to erect a system of checks and balances.

The process of social decision making, whether by businesses, conservation groups, development organizations, or governments, demands consideration of the positions articulated by advocates of the range of scope-focused centrism. We offer the principle of “pluralistic stewardship” as a holistic means of environmental policy analysis and decision making that admits diversity of perspectives on sustainability matters and focuses on their complementary interaction and the need to protect the whole system, not just its privileged, or particular underprivileged, components.

IV. Choosing the Right Path

Humanity enjoys disproportionate power to impose its will on the environment and thereby to influence the future path of the whole biosphere, humanity included. Indeed, this highlights a subtle irony: it is humanity’s awesome power over creation that motivates even the most ardently biocentric of environmentalists. Yet this points to the immutable anthropogenic process to which we have already referred. Humanity is both within nature, in biophysical terms, and above it, in decision-making capacity and authority. Yet because individual humans exhibit idiosyncratic preferences, suffer limited cognitive capacity, and are fallible and finite-lived, it is unlikely that any individual or subgroup could or would pursue an appropriately balanced path. Whatever the principal one imagines lies behind contemporary sustainability challenges, there is an associated human agency problem. When one admits the multifaceted human agency problem in representing nonhuman interests, it becomes plain that a pluralistic process offers the highest probability of delivering environmental protection consistent with a stewardship ethic. Our approach thus advocates pluralistic political processes for the admission and celebration of diverse

perspectives. Pluralism of that sort is the means by which we have the best chance of overcoming divisiveness and achieving unity, the identification and pursuit of goals common to all the participating perspectives.

Continued poor understanding of the complex web of interrelationships that link all elements (including humans) of a community may lead to disbelief in the existence of a common ground and to intolerance of others' world views. This clearly poses a challenge to any holistic approach. Our concern is that initiatives that fail to integrate the diverse, legitimate interests of distinct stakeholders are a siren's call of sorts, attracting attention and resources but ultimately making it difficult to shift from what may prove to be an unsustainable path to another that might be sustainable. This section makes the case for careful and critical *ex ante* assessment of policy paths.

It might seem an attractive intermediate step to pursue policies compatible with any two of the three objectives depicted as intersecting spheres in our heuristic model of section one, 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. We therefore support pursuit of intermediate strategies on an experimental basis and on a modest scale. We are, however, 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.

The principle risk involved in following a strategy compatible with less than all three objectives is the "path dependence" of policy and technology. The notion of path dependence emerges from nonstationary game theoretic models in which an agent's optimal present choice depends on the history of the game, i.e., the path followed. The economic concept of path

dependence derives from two sources: (1) the existence of positive feedback effects associated with fixed costs,³⁵ economies of scale,³⁶ learning effects,³⁷ 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 relative efficiency increases endogenously as its acceptance spreads. Turning back thus becomes more costly and less likely, and development strategies thereby become canalized.³⁸

We anticipate path dependence in the articulation and dissemination of environmental ethics and 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. Policies likewise create their own constituencies, not least of which among 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, can become difficult to reverse once strongly supported. Hence the need for care in choosing the right path.

Consider, for example, the economic development strategies in vogue during the early post-World War II years. These emphasized industrialization, the transfer of economic surplus from agriculture to industry, and state central planning of 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 these nations.

The boundaries of the areas of intersection among the three compartments in our model are clearly unknown; the search for a sustainable path is necessarily stochastic. Integrated conservation and development projects (ICDPs) currently in vogue in the developing world are one approach that comes close to achieving the desired holism and pluralism we advocate. While we have been critical of the present design of some ICDPs,³⁹ they properly couple conservation efforts with measures to relieve endemic poverty and social problems in human communities and policies to foster 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”.⁴⁰ 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 needed for peoples’ survival. ICDPs 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. 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.⁴¹ Still there are multiple, context-driven designs for ICDPs that, in aggregate, constitute a major, promising range of experiments toward identifying sustainable strategies.

ICDPs offer important examples 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 common ground. At the very least, these initiatives might be viewed as the first pragmatic steps in this direction. At best, the most successful ones may provide transferable lessons in how to cultivate and implement a holistic ethic of sustainability among human communities of divergent interests.

We 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 most sustainable strategy. Similarly, African wildlife and forest managers have been experimenting with a variety of ICDP designs and have been reasonably active in sharing lessons learned among themselves so as to promote more sustainable conservation and rural development efforts.

V. Conclusions

Contemporary debate about environmentally sustainable societies is too often a confrontational struggle between strong anthropocentric (“save it so we can use it”) and extreme biocentric (“all species are of equal worth and must be preserved”) perspectives. Ecologically and morally, 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 a diversity of world views, recognizes the potential for mutually compatible strategies, and seeks them out. This is pluralistic stewardship, in which priority is given, in both process and practice, to reconciliation of multiple scope-focused centrisms in the belief that there is ample as yet unexploited common ground among reasonable people of differing perspectives.

The whole of creation is in need of protection if its human and nonhuman systems are to prove sustainable for generations to come. There is increasing recognition of the complex interconnectedness and dynamics of all components of the planet. But the human agents for different value systems, and thus for different elements of the biosphere, routinely fail to communicate and coordinate effectively. The whole of creation is thus like a body without the nervous system that ensures a proper working relationship among the body's organs. A nervous system is necessary for the optimal functioning of the body as a unit. Not only does lack of communication lead to coordination failures in contemporary sustainability efforts, it too often begets disrespect which sows the seeds of future communication and coordination problems. A dialogical approach is necessary, in which science, pluralistic political processes, and the promulgation of widespread appreciation of the ecological and moral demands of sustainable societies play a central part.

Notes

1. Bryan G. Norton, *Toward Unity Among Environmentalists* (Oxford: Oxford University Press, 1991); Bryan G. Norton, "A New Paradigm for Environmental Management" In Robert Costanza, Bryan G. Norton, and Benjamin D. Haskell (eds.), *Ecosystem Health: New Goals for Environmental Management* (Washington: Island Press, 1992). See B. K. Steverson, "Contextualism and Norton's Convergence Hypothesis," *Environmental Ethics* 17 (1995): 135-150 for a recent critical assessment of Norton's ideas.
2. Raymond E. Grizzle, "Environmentalism Should Include Human Ecological Needs." *BioScience* 44 (1994): 263-8; U.S. Environmental Protection Agency (USEPA), *Note to Correspondents* (April 12), (Office of Communication, Education, and Public Affairs, 1994). The model is also a formal representation of what others have suggested (e.g. Ismail Serageldin and Andrew Steer, eds., *Making Development Sustainable: From Concepts to Action* (Washington D.C.: The World Bank, 1994); *Indicators of Sustainable Development, The Wuppertal Workshop - 15-17 November 1995* (UN Commission on Sustainable Development, 1995).
3. Sharachandra M.Lélé, "Sustainable Development: A Critical Review," *World Development* 19 (1991):609.
4. We use the term "human needs" as essentially synonymous with "human rights" as the latter appears in the current environmental ethics literature (e.g., James W. Nickel and Eduardo Viola, "Integrating Environmentalism and Human Rights," *Environmental Ethics* 16 (1994): 265-273). Our definition of human needs follows Paul Streeten, Shahid J. Burki, Mahbub Ul Haq, Norman Hicks, and Frances Stewart, *First Things First: Meeting Basic Human Needs in Developing Countries* (Oxford: Oxford University Press, 1981) and includes the assurance of adequate standards of nutrition, health, shelter, water and sanitation, and education.
5. Herman Daly is one of the most articulate voices for this position. See, for instance, his recent *Beyond Growth: The Economics of Sustainable Development* (Boston: Beacon Press, 1996)
6. Robert Solow is perhaps the best known proponent of this view. See his "An Almost Practical Step Toward Sustainability," invited lecture at Resources for the Future, 1992.
7. See, for instance, Lélé, "Sustainable Development: A Critical Review,"; Ralph C.d'Arge, Richard B.Norgaard, Mancur Olson Jr., and Richard Somerville, "Economic Growth, Sustainability, and the Environment," *Contemporary Policy Issues* 9 (1991): 1-23; Partha Dasgupta, *An Inquiry Into Well-Being and Destitution* (Oxford: Oxford University Press, 1993); or Christopher B.Barrett, "Fairness, Stewardship and Sustainable Development," *Ecological Economics* 19(1996):11-17.
8. In his *Toward Unity Among Environmentalists*, Norton uses such a two-compartment model. His view seems to be that our "human needs" and "economic welfare" concerns can be combined into a "socioeconomic" sphere.

9. Streeten et al., *First Things First*; Amartya Sen, *On Ethics and Economics*, (Oxford: Basil Blackwell, 1987); United Nations Development Program (UNDP), *Human Development Report 1995* (Oxford: Oxford University Press, 1995); Martha Nussbaum and Amartya Sen, eds., *The Quality of Life* (Oxford: Clarendon Press, 1993).

10. The traditional yardstick of macroeconomic performance, growth in gross domestic product (GDP) or gross national product (GNP), both omits net changes in natural resource stocks (a point about which many environmentalists have agitated), and imposes a weighted utilitarian social welfare function, in which individuals' weights are equal to their income the previous period. Humans' social value is directly attributable to income in the usual measure.

11. Gustavo Gutierrez, *A Theology of Liberation* (Maryknoll, NY: Orbis Books, 1973); National Conference of Catholic Bishops (NCCB), *Economic Justice For All: Pastoral Letter on Catholic Social Teaching and the U.S. Economy* (Washington, D.C.: NCCB, 1986).

12. On the Kenyan case, see Michael Norton-Griffiths and Clive Southey, "The Opportunity Costs of Biodiversity Conservation in Kenya," *Ecological Economics* 12 (1995):125-39, and J.S. Akama, C.L. Lant, and G.W. Burnett, "Conflicting Attitudes Toward State Wildlife Conservation Programs in Kenya," *Society and Natural Resources* 8 (1995):133-44. More generally, see Michael Wells, Katrina Brandon and Lee Hannah, *People and Parks: Linking Protected Area Management with Local Communities* (Washington: World Bank, 1992), Christopher B.Barrett and Peter Arcese, "Are ICDPs Sustainable? On The Conservation of Large Mammals in Sub-Saharan Africa" *World Development* 23 (1995):1073-1085.

13. Geir B. Asheim, "Sustainability: Ethical Foundations and Economic Properties." World Bank Policy Research working paper 1302; Joachim von Amsberg, "Excessive Environmental Risks: An Intergenerational Market Failure," *European Economic Review* 39 (1995):1447-64.

14. See Richard B. Howarth and Richard B.Norgaard, "Intergenerational Resource Rights, Efficiency, and Social Optimality," *Land Economics* (1990): 1-11.

15. For example, what we know and how we interpret knowledge depends 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 science.

16. Platteau analogously emphasizes the importance of "generalized morality" to the establishment of efficient markets, where all market failures cannot be fully resolved by government authority or by the careful definition of property rights (Jean-Philippe Platteau, "Behind The Market Stage Where Real Societies Exist—Parts I and II," *Journal of Development Studies* 30 (1994): 533-77 and 753-817.

17. David Colman, "Ethics and Externalities: Agricultural Stewardship and Other Behaviour: Presidential Address." *Journal of Agricultural Economics* 45 (1994): 299-311; Timothy O'Riordan, "Frameworks for Choice: Core Beliefs and the Environment." *Environment* 37(October 1995): 4-9; 25-29.

18. This 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.
19. See d'Arge et al., "Economic Growth, Sustainability, and the Environment," John M. Antle and Gregg Heidebrink, "Environment and Development: Theory and International Evidence," *Economic Development and Cultural Change* 43 (1995): 603-25; or Gene M. Grossman and Alan B. Krueger, "Economic Growth and the Environment." *Quarterly Journal of Economics* (1995): 353-77.
20. See, for example, Eugene C. Hargrove's *Foundations of Environmental Ethics* (Englewood Cliffs, NJ: Prentice Hall, 1989, p. 8) assessment of our search for an environmental ethic: "...our environmental ethic, when we really have one, will be a collection of independent ethical generalizations, only loosely related, not a rationally ordered system of ethical prescriptions."
21. Bryan G. Norton, "Why I am not a nonanthropocentrist," *Environmental Ethics* 17 (1995): 357. Also see Hargrove's *Foundations of Environmental Ethics* for similar arguments, and a "weakly anthropocentric" perspective.
22. Each of these perspectives forms the basis for particular ethical movements like "Deep Ecology," "Eco-Feminism," etc. Instead of treating all the various movements, we only consider the fundamental underlying perspectives.
23. Paul Taylor, *Respect for Nature: A Theory of Environmental Ethics* (Princeton: Princeton University Press, 1986). James P. Sterba, "From Biocentric Individualism to Biocentric Pluralism," *Environmental Ethics* 17 (1995): 191-207, provides a concise review of the influence of Taylor's arguments, and offers some revisions of his "priority principles."
24. Hargrove, *Foundations of Environmental Ethics*; James A. Nash, *Loving Nature: Ecological Integrity and Christian Responsibility* (Nashville: Abingdon Press, 1991), p. 10.
25. J. Baird Callicott, "I. Overview" in *Encyclopedia of Bioethics*, revised edition (New York: Simon & Schuster Macmillan): 680-83 reviews the ecocentrism literature.
26. Hargrove's *Foundations of Environmental Ethics*, Bryan G. Norton, "Environmental Ethics and Weak Anthropocentrism." *Environmental Ethics* 6 (1984):131-48, or Frederick Ferré, "Persons in Nature: Toward an Applicable and Unified Environmental Ethics," *Zygon* 28 (1993): 441-53
27. For example, see Streeten et al., *First Things First*.
28. See Amartya Sen's *Commodities and Capabilities* (Amsterdam: North Holland, 1985), "Well Being and Capability", in Nussbaum and Sen, *The Quality of Life, or Inequality Reexamined*.
29. See, for example, Daniel D. Chiras, *Environmental Science: Action for a Sustainable Future* (Redwood City, CA: Benjamin Cummings, 1994), pp. 494ff; and G.Tyler Miller, Jr., *Living in the*

Environment (Belmont, CA: Wadsworth Publishing, 1994), pp. 683ff. See Max Oelschlaeger, *Caring for Creation: An Ecumenical Approach to the Environmental Crisis* (New Haven, CT: Yale University Press, 1994), p. 3, for a similar criticism of such simplistic “binary opposition” perspectives.

30. H. Richard Niebuhr, *Radical Monotheism and Western Culture* (London: Faber and Faber, 1960).

31. Oelschlaeger, *Caring for Creation*; Christopher B. Barrett, "Fairness, Stewardship and Sustainable Development." *Ecological Economics*, 19 (October 1996):11-17.

32. James A. Nash, "Biotic Rights and Human Ecological Responsibilities," *Society of Christian Ethics Annual* (Boston: Society of Christian Ethics, 1993), p. 152.

33. Nash, "Biotic Rights".

34. See Raymond E. Grizzle and Christopher B. Barrett, "The One Body of Christian Environmentalism," *Zygon*, forthcoming.

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

36. Economies 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.

37. Learning effects occur when efficiency improves with experience, yielding externalities economists label “learning by doing” (Kenneth A. Arrow, “The Economic Implications of Learning by Doing,” *Review of Economic Studies* (1962): 155-73).

38. Path dependence is particularly associated with the development of technologies, such as the QWERTY typewriter keyboard (Paul David, “Clio and the Economics of QWERTY.” *American Economic Review* 75 (1985): 332-7), light-water nuclear reactors, or the gasoline engine (W. Brian Arthur, “Competing Technologies, Increasing Returns and Lock-In By Historical Events,” *Economic Journal* 99 (1989): 116-31). It has also been used to explain environmental decline (Eban Goodstein, “The Economic Roots of Environmental Decline: Property Rights or Path Dependence?” *Journal of Economic Issues* 29 (1995): 1029-43).

39. Barrett and Arcese, “Are Integrated Conservation-Development Projects (ICDPs) Sustainable?”; Christopher B. Barrett and Peter Arcese, “Wildlife Harvest in Integrated Conservation and Development Projects (ICDPs): Linking Harvest to Household Demand, Agricultural Production and Environmental Shocks in the Serengeti,” *Land Economics*, forthcoming.

40. Mohan Munasinghe, “Economic and Policy Issues in Natural Habitats and Protected Areas.” In Mohan Munasinghe and Jeffrey A. McNeely (eds.), *Protected Area Economics and Policy: Linking Conservation and Sustainable Development* (Washington: IUCN and World Bank, 1994).

41. Wells, Brandon, and Hannah , *People and Parks*; Patrick C. West and Steven R. Brechin (eds.), *Resident Peoples and National Parks: Social Dilemmas and Strategies in International Conservation* (Tucson: University of Arizona Press, 1991); David Western, R. Michael Wright, and Shirley C. Strum, *Natural Connections: Perspectives in Community-Based Conservation* (Washington: Island Press, 1994); Barrett and Arcese, “Are Integrated Conservation-Development Projects (ICDPs) Sustainable?;” and Barrett and Arcese, “Wildlife Harvest in Integrated Conservation and Development Projects.”.