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**MARKETS, SOCIAL NORMS, AND GOVERNMENTS IN THE  
SERVICE OF ENVIRONMENTALLY SUSTAINABLE ECONOMIC DEVELOPMENT**

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## **Markets, Social Norms, and Governments In The Service of Environmentally Sustainable Economic Development**

The concepts “stewardship” and “sustainable development” arise frequently in contemporary work on environmental protection and economic development. The considerable variation in the use of the concepts, however, largely reflects the commentators’ different and often hidden normative axioms. This paper highlights several distinct, influential normative traditions and explains how together these point toward multiple institutional channels to meet contemporary environmental challenges. My own perspective is that of a development economist with research interests in agricultural development and poverty alleviation in poor communities. So in this paper I concentrate on low- and middle-income countries—which account for 85% of the world’s population and 76% of its inhabited land mass—and hence on the “green” issues of renewable resource management that disproportionately affect poor rural populations in the low-income world more so than on “brown” issues of pollution and waste disposal more pressing to urban folk and the industrial world.

### **I. Distinct Normative Approaches**

Economics, ecology, and ecumenism all derive from the Greek word *oikos*, meaning household, but by no means share the same assumptions of what is essential or desirable. Our disciplinary traditions often cloud our ability to understand why others might reasonably take a different approach. This section briefly maps out some useful core principles of and fundamental differences between economic, ecological, and ecumenical Christian perspectives on sustainable development and stewardship. My goal here is to distill the core normative principles of these perspectives not to provide a comprehensive survey.

A. Economics: Economists occupy privileged positions in contemporary policy debates, including those concerning the environment. This is particularly evident in debates surrounding “sustainable development,” suddenly a central theme of the foreign policy of wealthy, industrial nations, of development lending by multilateral organizations, and of the conservation strategies of international environmental groups. Perhaps the most commonly cited definition of “sustainable development” is that of the Brundtland Commission: “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987, p. 43). This definition summarizes a generation of economic thinking about environmental protection as fundamentally a question of optimal intertemporal management of natural resources.

But the element of the Brundtland Commission definition on which most scholars and policymakers has seized is its explicit adoption of intergenerational equity as the core normative axiom of sustainable development. It is easy to see why this mandates environmental protection. Nondeclining future per capita incomes and standards of living depend on a nondeclining stock of productive capital. Since some capital stock depreciates naturally, sustainable development requires substitution for consumed, nonrenewable natural resources, and investment in those substitutes at no less than the rate of simultaneous depletion of environmental resources (Georgescu-Roegen 1971; Daly and Cobb 1989; Perrings 1996). As awareness of the complex fabric of ecosystems has increased, however, economists’ confidence in the substitutability between forms of capital has diminished. While some substitution possibilities are feasible (e.g., solar energy from photovoltaic cells in place of energy produced by burning fossil fuels), we have become increasingly cautious about environmental destruction and manufactured replacement as a sustainable pattern of resource use. So economists have become increasingly cognizant that conservation of natural capital is central to

intergenerational equity and to the optimal management of a resource.

But why emphasize *intergenerational* equity over *intragenerational* equity? If the goal is to make possible for others what is possible for us — a variant of the golden rule — the principle applies no less within contemporary society than across sequenced societies, a point regrettably ignored in most contemporary writing on sustainable development. This oversight matters, since the poor are both victims and agents of environmental degradation (Barrett 1996). Basing the sustainable development ethic on intergenerational equity seems an arbitrary and incomplete social philosophy.

The more useful economic principle embodied in the Brundtland Commission definition is that of Paretian efficiency: we must not waste resources in the process of meeting the needs of the present generation. A distribution is “Pareto efficient” if and only if no one could be better off without making at least one person worse off. It is rare, however, to find changes that would not make at least one person worse off, so the Pareto criterion in its strict sense is relatively useless. More useful is the concept of “potential” Pareto improvements, combined with the compensation principle, wherein gainers fully compensate the losers from a particular policy reform.<sup>1</sup> Pareto efficiency and competitive market equilibria are logically equivalent under particular, common assumptions.<sup>2</sup> This equivalency between competitive market equilibria and efficiency motivates economists’ heavy reliance on markets as mechanisms for allocating scarce resources of all kinds.

Market prices play a central role in efficient allocation across space and time. But problems arise under three common circumstances: in the presence of externalities that drive a wedge between

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<sup>1</sup> Without compensation, the potential Pareto principle reduces to utilitarianism.

<sup>2</sup> This relationship's high status within the discipline is clearly reflected by its label: the First and Second Theorems of Welfare Economics.

private and social valuation, in the absence of markets and observable prices, and in the face of uncertainty against which one cannot fully insure (e.g., the environmental impacts of irreversible development).

Externalities, the absence of markets and observable prices, uncertainty, imperfect substitutability, and the dynamic interdependence of systems weaken the textbook case for free markets but do not fundamentally alter the central importance of efficiency, as quite distinct from the market mechanism used to foster efficiency. These merely complicate the computation of costs and benefits necessary to establish the availability of potential Pareto improvements and create the space for nonmarket institutions — social norms and governments, in particular — to play an important role in efficient resource allocation. The key normative criterion contributed by economics is not the intergenerational equity but the more fundamental principle of efficiency.

B. Ecology: The anthropocentric line of economic reasoning described above understandably disturbs many ecologists, conservation biologists, and ethicists who find intrinsic value in nature itself, not just instrumental value derived from nature's capacity to satisfy human needs and wants. Objecting to environmental management based solely on human valuation of natural resources, commentators routinely emphasize that humans are merely a part of a complex ecosystem that influences us as much as we influence it. As a species, we have been relatively slow to recognize the importance of community between humankind and otherkind and to therefore take greater care in our treatment of the rest of Creation. Perhaps Sagoff (1995, p. 618) sums this sentiment up best: "[t]he reasons to protect nature are moral, religious, and cultural far more often than they are economic." I would largely agree with this claim, while pointing out that while the *reasons* to protect nature may

be largely noneconomic, in a fallen world the *means* to do so rely (perhaps distressingly) more on economics.

Irrespective of the rights of other kind, humans design and implement efforts to steward the biosphere. Allowing for even the slightest human free agency and sinfulness, getting human incentives right is a necessary condition to environmentally sustainable behaviors, regardless of the morally appropriate allocation of rights. If we are to recognize the coevolutionary nature of all Creation — humankind and otherkind — in all of the small, daily choices that collectively leave a considerable human footprint on the biosphere, incentives have got to guide human behaviors in appropriate directions. Markets, influenced by governments and by the social norms of communities, establish those incentives.

The anthropocentric arrogance rightly challenged by many conservationists is too often mirrored by “green imperialism” on the part of conservation groups. The gazetting of parks in the low-income world and various other initiatives born of western environmental campaigns too often amount to little more than a wealthy population’s imposition of its values on a distant poor population that bears most of the costs of conservation. As David Cumming of the Worldwide Fund for Nature recognizes, “Only in Britain and America do people mistake animal welfare for conservation. To force western values on African culture is cultural imperialism” (as quoted in *The Economist*, Sept. 7, 1996, p. 15). The principle of humility is central to the concept of community.

Humility must be reflected in method as well. Mainstream economists tend to build universal models based on micro-scale theories of the consumer and of the firm. Systems ecologists, on the other hand, are more inclined to deemphasize individual members of species and to express concern about large-scale systems (Norton and Toman 1997). A more promising and recent perspective

emerges from hierarchical systems, which nest smaller scale systems within larger scale ones (Common and Perrings 1992, Holling 1992, 1994; Norton 1992), debunking the notion that the macrocosm mirrors the microcosm. An understanding of small-scale dynamics does not imply an understanding of large-scale ones, nor vice versa.

The crucial normative axiom emerging from the ecological sciences is that of community, and, derivatively, humility regarding our place in the biosphere. The very dependence of humanity on the rest of creation and the intrinsic worth of nature should imbue us with appropriate caution. An axiom of community does not, however, absolve us of the need to make conservation consistent with humans' imperfect aspirations nor of the need to satisfy aspirations in the most efficient manner possible.

C. Christian:<sup>3</sup> There is no single "Christian" environmentalism today, but rather a rich diversity of approaches. These are perhaps best recognized as the embodiment of St. Paul's (1 Corinthians 12) insight that we are many parts of one body (Grizzle and Barrett 1998). The economic and ecology paradigms crudely mapped above offer distinct, fundamental truths, but neither can stand fully on its own. Christian environmentalism is gradually evolving toward a more holistic approach incorporating the ethics of efficiency and community and adding to these a cornerstone principle of Christianity: compassion. Christ directs His followers to feel the pain of those who suffer and to attend to their needs. Simply put, Christians must heal the suffering of creation, both its human and nonhuman components. Compassion is a call to seek justice.

The axiom of compassion adds value those of community and efficiency. Recognition of

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<sup>3</sup> While I suspect the principles discussed in this section apply to many non-Christian faiths, I am only able to speak competently to my own religion's perspective on the biosphere.



interdependence within a community, even of moral equality, stops short of motivating action to remedy identifiable problems. Meanwhile, efficiency generally concentrates on the procedural justice of competitive markets, ignoring issues of *ex ante* distributional justice (are initial distributions fair?) and, as a consequence, of *ex post* distributional justice.<sup>4</sup> The axiom of compassion fills these notable voids and, together with community and efficiency, creates a set of useful axioms with which we can define and pursue environmentally sustainable economic development.

The Christian tradition is also explicitly pluralistic, admitting multiple principles to guide behavior. Jesus explicitly rejected moral monism when challenged to single out the greatest of all commandments, replying instead that there are two fundamental principles (Mark 12:28-31). There is considerable and growing support for a similarly pluralistic approach to contemporary environmental issues (Norton 1995; Norton and Toman 1997; Barrett and Grizzle forthcoming; Grizzle and Barrett 1998).

Pluralism poses two major challenges. First, all parties must maintain a commitment to open, respectful dialogue. Pluralism thus favors participatory methods to identify and analyze challenges, and to propose, design, implement and evaluate prospective solutions. Decision making necessarily becomes more local, with policy making done “from the bottom up,” following the principle of subsidiarity. Environmental policy is becoming more participatory and more local, perhaps especially in low-income agrarian communities in which global environmental challenges of biodiversity loss and deforestation are paramount (Wells et al. 1992; Western et al. 1994). The dictum “think globally, act locally” encourages community-based activism, and the evidence in both the social and biological

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<sup>4</sup> Barrett (1996, 1997a) advocates “fairness” theory as a way to include both distributional and procedural justice considerations in economic theorizing about sustainable development.

sciences is that pluralistic approaches are more effective than monistic ones in combating serious problems (Barrett and Csete 1994; Western et al. 1994).

The second major challenge is the need for multiple accounting systems and decision rules corresponding to the multiple axioms underpinning choice (Norton and Toman 1997). This necessarily requires parallel efforts at understanding the same phenomena or alternatives from different perspectives. A pluralistic system will not likely be a least-cost means to make decisions about the environment,<sup>5</sup> but it is perhaps best suited to an adaptive management paradigm (Holling 1978), explicitly recognizing both the depth of our ignorance about inherently uncertain ecological relationships and the considerable value of information that can help reduce that uncertainty.

D. Pluralistic Stewardship:<sup>6</sup> The concept of “pluralistic stewardship” offers a helpful means to reconcile the potentially complementary axioms of efficiency, community and compassion. Stewardship holds that the possessor of a natural resource should behave as a custodian, using the resource wisely but enjoined from destruction or disposal. Stewardship of creation, i.e., of the full array of human and nonhuman biota and abiota, combines efficiency and compassion, in its mandate of wise resource use on behalf of all creation, with community in its denial of individual ownership of all possible rights in property, most notably the right of destruction. Stewardship identifies possessors as managers, servants, and beneficiaries rather than as masters.

Stewardship necessarily limits property rights, denying the Lockean tradition of ownership

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<sup>5</sup> Note that “least cost” and “most efficient” are often mistakenly treated as synonymous in the popular press. The most efficient solution maximizes net benefits (total benefits less total costs), i.e., it exhibits zero *net marginal* cost, which is different than zero *total* cost.

<sup>6</sup> This term originates with Barrett and Grizzle (forthcoming).

that lies at the core of western market economies, wherein a full suite of property rights (i.e., including rights to destruction and disposal) derives from the application of human labor effort to a hitherto unclaimed resource. Stewardship resembles more closely many communal tenure regimes wherein exclusive rights to use and even to transfer a resource (particularly by bequest) accrue to the person who first domesticates it. Property rights are social constructions; ownership must be recognized and enforced within a society, whether by a state with police powers or by elders with moral authority. There is nothing fundamental to rights systems that necessitates ubiquitous private ownership of natural resources. This in no way denies the strong efficiency arguments favoring private property rights associated with possession (see section IIIA on markets). Pluralistic stewardship merely limits the extent of those rights in order to recognize that compassion and community are normative axioms not dominated by the axiom of efficiency.

### **III. Information Channels and Incentive Mechanisms**

Articulating normative axioms is necessary but insufficient to advancing the goal of environmentally sustainable economic development. Implementation must be carried out by humans needing reliable and timely information available on which to base decisions, and facing incentives that must induce them to behave in a manner consistent with socially agreed normative axioms.

Human decision making is framed by three broad classes of institutions that guide information flow and incentives: markets, social norms, and governments. Each employs a different enforcement mechanism to influence individual choice. Social norms invoke conscience and peer pressure, governments rely on police and taxation powers, and markets employ individual's self-interest. These are thus best viewed as complementary institutions that society can shape so as to facilitate economic

development and environmental protection (Barrett 1997a,b; Barrett and Grizzle forthcoming). As Arrow et al. (1995, p. 520) put it, “The solution to environmental degradation lies in such institutional reforms as would compel private users of environmental resources to take account of the social costs of their actions.” This section discusses each of these three broad institutions and why all three are necessary to advance pluralistic stewardship.

A. Markets: Markets are inherently pluralistic institutions. Indeed, markets are interesting and important precisely because they encourage interaction and coordination within a society comprised of individuals possessing different information, abilities, and preferences. Minority viewpoints have as much standing in a market as majority viewpoints. By offering mutually beneficial exchange, markets provide a means to articulate and accommodate plural interests. Individuals are part of a complex system of production, consumption, and exchange, a material ecosystem of sorts. When competitive, markets are one of the best known means to limit the concentration and abuse of individual power.

Perhaps markets’ most important function is to provide information essential to the efficient allocation of resources to their most valuable uses through price signals of relative scarcity. The prices heterogeneous people and firms are willing to accept or pay offer a useful summary statistic for relative value in markets in which information flows freely. Complete competitive markets generate price signals that yield Pareto efficient equilibria. Moreover, price signals induce much nonrandom resource substitution, technological advance, and scientific discovery to improve resource management (Binswanger and Ruttan 1978). When markets function properly, increasing resource scarcity naturally increases the returns to inventions that conserve, substitute for or discover new

stocks of threatened natural capital.

Increased relative scarcity occurs either because of increased demand or decreased supply. As incomes and public awareness of limited ecological resilience increase, more people place greater intrinsic value on environmental protection and demand for natural resources increases, driving up their prices and encouraging their conservation. Similarly, increased perception of resource scarcity, caused by depletion or by scientific findings that increase estimated minimum sustainable stocks (ecological resilience), raises resource prices and encourages voluntary conservation. Both demand and supply-side impulses encourage creative conservation innovations and the transfer of resource use rights to those who best conserve the resource. This is apparent in the rapid and widespread emergence of wildlife ranches in eastern and southern Africa, and in the increasingly common purchase of land by environmental nongovernmental organizations (NGOs) that subsequently convert the area into reserves. Competitive markets facilitate conservation.

Controlled markets, by contrast, distort prices, often discouraging conservation and promoting unsustainable rates of resource exploitation. This is the experience of most centrally planned economies. Industries in China and eastern Europe generated unprecedented air pollution because they were directed to produce a certain volume of manufactures, without competition from foreign imports, and using coal-generated energy priced below cost. Administrative pricing and regulated production and trade patterns distort the information and incentives available to micro-level decision makers. When combined with ancillary interventions to ensure the most vulnerable and resource-dependent members of society can share in the benefits, market-oriented economic liberalization can thus be socially and environmentally beneficial (Barrett and Carter forthcoming).

Competitive markets are not free nor do they emerge spontaneously; they are expensive social

constructions wherein individuals come together freely to transfer rights over the future value of an object or service (Polanyi 1957; Bromley 1991). Competitive markets thus require low transactions costs that permit a well-defined and defended system of transferable property rights, and mature financial systems to facilitate exchange. Hence the intrinsic interdependency between markets, social norms, and government.

Property rights make individuals accountable for their actions and thereby create incentives for resource conservation or transfer. It is because the principle of accountability underlies an effective system of property rights that state ownership generally fails, especially with a powerful state not beholden to its constituents. Property rights are most effective when parties' rights can be enforced and exchanged. Any of several kinds of tenurial regimes—e.g., private property, co-management, etc.—can offer clearly defined, protected, and transferable private usufructure rights that foster efficient and equitable resource management (Baland and Platteau 1996; Hanna 1996).

The importance of transactions costs has long been recognized in economics (Coase 1960) and is the central theme of the new institutional economics (Bromley 1989, 1991; North 1991; Platteau 1994a, 1994b). Hill (1994, p. 124) points to transaction costs as “the reason for the divergence between private actions and social consequences . . . . If we think of transaction costs as *the costs of defining and enforcing rights and carrying out exchanges*, it obvious that these costs are much higher with some resources, such as air, than with others, such as land. We fail to have fully defined rights over certain resources because of high transaction costs, and in those cases the unfettered interaction of individuals will not produce the socially desirable amount of activity” (emphasis in original). Higher transaction costs lead to less complete sets of property rights and less efficient exchange of existing rights, with the consequence that more natural resources fall prey to

overexploitation. Transactions costs are particularly high in the low-income agrarian nations of the tropics, leading to poorly defined and enforced systems of property rights, limited exchange opportunities, incomplete and noncompetitive markets, and a dangerously rapid rate of deforestation, desertification, biodiversity depletion, topsoil erosion, and air and water pollution.

Transactions costs are high in the absence of well-functioning communications and transport networks — the physical infrastructure of an economy — or of a mature legal system and a free press — the institutional infrastructure of an economy — to produce clear and consistent definition, enforcement and transferability of property rights. Moreover, all well-functioning market systems have depended on pervasive generalized morality (Bromley 1989; North 1991; Evensky 1993; Platteau 1994a, 1994b; Barrett 1997b). Interpersonal trust and social networks founded on trust permit low-cost transactions, efficient division of labor according to comparative advantage, and higher rates of investment and innovation.

Financial markets are of special importance because they permit borrowing and saving to finance the purchase of durable property rights, and they enable individuals to insure against risks that might otherwise impede investment and resource conservation. The absence of well-functioning financial markets for saving, credit, and insurance often fosters excessive resource exploitation. For example, pastoralists who cannot reliably save in or borrow from a banking system have a tendency to overstock pasture, leading to increasingly fragile range ecology and greater risk of livestock die-offs (Coppock 1994). Similarly, insufficient access to credit or insurance to allow peasant farmers to mitigate price risk in staple foodstuffs increases incentives to undertake destructive slash-and-burn farming (Barrett 1998a). By contrast, debt-for-nature swaps executed by international environmental NGOs have helped protect millions of hectares of ecologically valuable forest and rangeland in the

low-income tropics over the past decade only because secondary markets in sovereign debt emerged in a competitive international financial market.

For all their virtues of promoting efficiency and community, markets are not especially well-suited to advancing the goal of compassion. This threatens the environment because the poor are both the principle victims and the primary destroyers of natural capital in the low-income tropics (Perrings 1989, 1996; World Bank 1992; Reardon and Vosti 1995; Barrett 1996, 1997a, 1998a; Barrett and Arcese 1995, 1998). Deforestation, wildlife poaching that threatens biodiversity loss, overgrazing that facilitates erosion and habitat destruction, and other unsustainable exploitations of renewable resources too often result from one billion poor peoples' daily struggle to survive. Attempts at resource conservation today may be futile in the absence of measures to combat poverty since "for the environment, destitution is far worse than economic development" (Sagoff 1995, p. 616). More optimistically, the World Bank (1992, p. 1) asserts, "there are strong 'win-win' opportunities that remain unexploited. The most important of these relates to poverty reduction; not only is attacking poverty a moral imperative, but it is also essential for environmental stewardship." The good news is that futile experimentation with state-directed resource allocation is now a thing of the past and there are widespread good faith efforts at building authentically competitive markets based on well-defined systems of property rights and low transaction costs. The movement toward markets in the low-income world is desirable, well under way, and likely irreversible.

B. Social Norms: Social norms are the standards of conduct and moral judgements collectively espoused by individuals within a society. The cultivation and maintenance of norms that celebrate the axioms of efficiency, community, and compassion are thus obvious means by which contemporary



society can operationalize stewardship. Norms are necessary to pluralistic stewardship because a wildly uneven distribution of decision-making power endows a small subpopulation of humans with virtually unchecked discretion over creation. Markets and governments can limit the damage done directly or indirectly by this cohort (of which we are certainly a part), but those formal institutions are rarely sufficient to prevent catastrophic, irreversible environmental damage. Moreover, governments and markets are weakest in precisely those parts of the low-income world where renewable resource depletion is of greatest concern.

Thankfully, many individuals and cultures already adhere to a strong ecological ethic, although, regrettably, economic and governmental forces sometimes erode these traditions. Individual conscience and social stigma can serve to enforce norms of efficiency, humility and compassion where economic and legal institutions cannot. The more social scientists study social behavior applied to common property resources, the more we realize the importance of what Cordell and McKean (1992, p. 191) observe in Brazil to be an ethical code “far more binding on individual conscience than any government regulations ever could be.”<sup>7</sup> Thus, 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” (Barrett and Grizzle forthcoming).

Social norms have direct and obvious value to stewardship because they encourage individuals to exercise compassion and humility. Economic theory tells us that some “public” goods will be

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<sup>7</sup> Ostrom (1990) and Bromley (1992) offer excellent summaries of this rapidly emerging literature. Dasgupta (1993) offers an excellent discussion of the importance and power of internalized norms, and Putnam (1993) offers fascinating insights on the value of persistent civic-mindedness in democratic society.

severely undersupplied by markets because the provider of public goods cannot exclude others from enjoying their benefits. Marginal private benefits are thus less than marginal social benefits of public goods investment, leading to socially suboptimal supply. There are many examples, however, of public goods that are plentifully supplied by private donor-investors: e.g., community leadership or houses of religious worship. Individuals often pay for such amenities out of a sense of duty as much as because they are maximizing their own welfare (Barrett 1998b).

Just as the empirical evidence does not fully support the neoclassical prediction that public goods should always and everywhere be severely undersupplied, so too does the evidence fail to support the popular prediction that common property resources will always be overexploited. Overexploitation of open access resources occurs much less so than “the tragedy of the commons” predicts. A better understanding of why individuals voluntarily exercise restraint is of potentially enormous importance to the task of pluralistic stewardship. Evolutionary game theorists are finding that social systems exhibit multiple stable equilibria, including not only those characterized by the tragedy of the commons, in which individualistic behavior leads to resource overexploitation, but also a norm-guided society of cooperation, individual restraint, and decentralized enforcement of codes of conduct (Platteau 1994a, 1994b; Baland and Platteau 1996; Sethi and Somanathan 1996). The key to realizing the latter, preferable equilibrium is that a sufficient proportion of society acts cooperatively so that this behavior persists in the face of idiosyncratic violation by a minority.

Hence, the importance of promoting ecological ethics of the sort captured in the popular maxim “think globally, act locally.” In the face of increased individual mobility that decreases communities’ capacity to induce cooperative individual behavior by sanctioning transgressors, it becomes all the more important to instill in people a strong self-directed ethic of stewardship. Toward

that end, Nash (1991) advances a set of nine “ecological virtues,” which he describes as “patterns of personal and social perspective and behavior that, if followed, can make ecological integrity a reality.”

The good news is that such virtues are being actively promoted in churches, schools, and local gathering places throughout the world. There has been a stunning shift in perspective regarding humanity’s place in and responsibilities to creation in the past generation. Anyone who spends time in elementary or secondary schools, in this country and many others, cannot help but come away impressed by the depth and sincerity of the environmental stewardship convictions held and expressed by today’s children. While some of this innocent idealism will surely tarnish as they age, I retain great hope that we are helping our children learn early the lessons we and our parents discovered rather late: that we need to think globally and act locally.

Social norms also have instrumental value through their facilitation of competitive markets and good governance. As discussed already, efficient markets depend on a generalized morality. Although rarely recognized by those who most frequently invoke his writings, Adam Smith advocated a market economy not because he believed in its inherent virtue, but because he believed most people were sufficiently virtuous to make market exchange feasible and that the police power of the state could satisfactorily contain the damage done by the rest. Indeed, in his *Theory of Moral Sentiments*, Smith emphasized the superiority of assistance “reciprocally afforded from love, from gratitude, from friendship, and esteem” as the root of a flourishing society. Recognizing, however, that “man has almost constant occasion for the help of his brethren, and it is vain for him to expect it from their benevolence only,” Smith saw an important role for self-interested behavior as well, hence his famous “invisible hand” metaphor. In Smith’s view, a market-based “society, though less happy and agreeable, . . . may subsist . . . by a mercenary exchange of good offices accordingly to an agreed

valuation.” The virtue of markets, in the authentic Smithian view, is that they are participatory, encouraging free and frequent human interaction that induces innovation and requires honest behavior to maintain associates’ trust. Simply put, Smith saw a market economy founded on social norms as more compatible with the other necessary ingredients of a moral society than the feudal or mercantilist systems familiar to eighteenth century England.

The norms prevailing in a society also underpin its governance. Widely held perceptions of what is fair behavior limit potential abuses of power. Procedural legitimacy is necessary for the sustainability of any human institution. Violence, towards the poor or the environment, feeds on silence; it is overcome through advocacy and dialogue.

Social norms in turn depend on markets and governments. While love is the greatest virtue, it may also be the scarcest, and we must therefore economize on its use where we can. This is the point of the earlier quote by Adam Smith in his famous argument for free markets, which lessen individuals’ dependence on others’ benevolence. Moreover, competitive markets and participatory governance facilitate regular human contact that helps feed compassion and a commitment to pluralism.

Governments, meanwhile, help ensure satisfactory provision of public goods in information, law enforcement, and education, which help shape and buttress the norms prevailing in a society. The legal and regulatory systems of the state also articulate and enforce codes of conduct, thereby setting uniform public standards on matters of broad agreement. Among the most important safeguards a government can defend are the rights to free speech and religious tolerance, for the defense of minority views and interests is crucial to the persistence of authentically pluralistic systems. This checks the tendency of social norms to mutate into ideologies that can become oppressive rather than

liberating.

Governments also have an important role in cushioning against shocks, both domestically and internationally. The severe dislocations involved in rapid sociopolitical transitions in Europe, Africa, and Latin America, and the apparent rapid rise in crime and predatory behavior are disturbing examples of what can happen when governments become impotent in a time of swift change. Where national governments have been unable to cushion their citizens from dramatic change, the international community has a practical need as well as a moral obligation to assist. As economies integrate internationally and communities become less isolated from external cultures, harmonization of international codes of conduct becomes crucial to maintaining stable, cooperative social systems. The easier it becomes to escape social sanction, the less likely is a system to evolve toward a norm-guided equilibrium in which individuals transcend purely self-interested welfare maximization to behave in a socially optimal fashion. Isolationist policies are a clear threat to the establishment and maintenance of universal norms that must underpin environmentally sustainable development.

Many of the most pressing contemporary environmental challenges—biodiversity loss, deforestation, desertification, soil erosion—are most acute where markets and governments are weakest. Individuals must nonetheless have an impulse to steward resources without the lure of profit or the threat of government penalty. Hence, the urgent need to cultivate universal norms of pluralistic stewardship within ourselves, our churches, our civic institutions, and our children.

C. Governments: The traditional economic view is that the appropriate role of government is to correct market failures and to provide public goods. Unfortunately, many states have failed to do those two things well, with serious consequences, and as a consequence, governments are under

attack in most places. Nonetheless, governments have crucial roles to play in the task of pluralistic stewardship. While improving the quality of governance is a desirable objective, we need to take care not to destroy the credibility and authority of governments in the process of reforming them.

Markets founded on self-interested, optimizing behavior will generally not lead to an efficient allocation of resources in the presence of externalities. Governments can eliminate externalities through taxes or subsidies to equate private and social costs and benefits. Theory tells us taxes and subsidies will usually be more efficient than regulatory prohibitions. But where uncertainty abounds, then there may be a sound basis for regulation according to the precautionary principle (Bishop 1978). This principle is the basis for safe minimum standards to minimize downside risk associated with potentially catastrophic events.

Public goods are a very special type of externality associated with goods that are “nonrival” (many individuals can enjoy it without diminishing another’s consumption) and “nonexcludable.” Governments need to provide public goods that fulfill five important objectives: (i) to facilitate low transaction costs that enable the definition, enforcement, and exchange of property rights; (ii) to improve information on and understanding of the relationship between human society and the broader ecosystems of which we are a part; (iii) to defend competitive markets; (iv) to ensure macroeconomic stability; and (v) to cushion society against shocks, providing social safety nets and transfers as needed. Having already discussed the provision of physical and institutional infrastructure to reduce transactions costs, let us now turn to these other four missions.

Reliable and timely information properly understood is fundamental to making efficient and compassionate choices. Research and education are the principal means by which societies produce information and understanding. The empirical evidence strongly suggests that basic research and

training is distinctly undersupplied by private sources, yielding extraordinarily high annual rates of return to public research and training. The more we study ecosystems and their linkages to socioeconomic systems, the more we learn about how resilient or fragile each system is to distinct types of perturbations and the better equipped we become to steward creation. Recent initiatives to integrate environmental sustainability questions fully into more traditional lines of research in engineering and the social sciences deserve considerable attention and support. Governments must be reminded regularly of the wisdom of investing in the public goods of research and education.

Governments must also defend the competitiveness of markets through active antitrust enforcement, now largely absent in the low- and middle-income world. Defense of competitive markets also demands state restraint from administrative pricing, unnecessarily distortionary taxation, and barriers to domestic and international flows of goods, services, and people. Restrictions on trade and immigration result primarily in the immiseration of populations in low-income economies, inducing their increased overexploitation of renewable resources, in part due to greater use of older and “dirtier” technologies. On balance, free trade is a friend to the poor and to the environment in most of the world.

The fourth public good that governments need to deliver is a stable macroeconomic environment for private decision makers. A key lesson of the generation of macroeconomic policy making in Africa and Latin America from the mid-1960s through the mid-1980s is that lax fiscal and monetary policies generate high and volatile inflation rates and weak financial systems, undercutting incentives to save and invest, degrading real wages, and thereby hurting the poor and sparking excessive natural resource exploitation. Prudent macroeconomic management is central to sustainable development (Gandhi 1996).

Necessary macroeconomic liberalization in most of the low- and middle-income world needs, however, to be reconciled with the preexisting institutional shortcomings of low-income nations. We live in what economists call a “second-best” world, i.e., one tainted by the imperfections inherent to original sin. This is one reason why the first order of business in most of Sub-Saharan Africa and many other desperately poor parts of the world should be microeconomic and institutional reforms to reduce transaction costs, extend property rights coverage, foster competitive markets, and increase the supply of necessary public goods. In the absence of ancillary investments, macroeconomic and sectoral liberalization reforms can cause significant and unanticipated environmental and human injury (Barrett and Carter forthcoming; Mäler and Munasinghe 1996, Opschoor and Jognma 1996). Macroeconomic stability is necessary but not sufficient to sustainable development.

Finally, governments must ensure the existence of social safety nets that guarantee all persons access to a minimum level of food, clean water, clothing, and shelter necessary for survival. Where communities do not protect the vulnerable, the state must, out of compassion for both humans and the environment. When their brothers and sisters will not support them, the poor turn to nature, often in a quite unsustainable manner, through resource exploitation and procreation. Both theory and empirical evidence suggest that social safety nets reduce the need of poor populations to resort to environmental predation (Bluffstone 1995; Barrett 1998a, Barrett and Arcese 1998). Fiscally-strapped low-income country governments rarely can afford to provide complete safety nets. Hence the need for foreign assistance to poor communities worldwide in recognition of international interdependency in ecological and economic systems. Unfortunately, the opposite is occurring; already-low aid budgets are dwindling rapidly. While poor countries struggle to pay for food, medicines, and school books to meet their populations’ most basic human needs, wealthy nations that



can afford to underwrite necessary investments in environmental protection have been disgracefully slow to offer more than rhetorical support. Kenya, for instance, a nation with an annual per capita income of less than \$300, sacrifices approximately \$200 million annually to conserve biodiversity through protected areas, the benefits from which accrue globally and are enjoyed especially by relatively wealthy westerners (Norton-Griffiths and Southey 1995). The costs, meanwhile, fall disproportionately on Kenya's poorest citizens, the rural poor on the periphery of protected areas. These folk have grown increasingly dissatisfied with unnatural parks and reserves (Western et al. 1994; Akama et al. 1995). Community-based conservation schemes aim to benefit local populations, but these schemes have generally proved unsatisfactory to date (Wells et al. 1991; Brandon and Wells 1992; Western et al. 1994; Barrett and Arcese 1995, 1998). Social unrest over conservation in low-income countries will become a far more serious threat to stewardship in the coming years if the wealthy, there and here, do not exhibit more foresight and compassion.

In order to undertake these activities successfully, governments need a bedrock of competitive markets and firm social norms. Well-functioning markets reduce the temptation of policy makers to meddle in resource allocation issues over which they possess comparative disadvantage, instead encouraging concentration on the fundamental functions of government outlined above. The failures of governments, especially but not exclusively in the developing world, have thus been both of commission and omission (Krueger 1990). The good news is that it seems we have learned this lesson and are adapting accordingly, if slowly.

### **III. Concluding Remarks**

Authentic sustainable development, in the form of stewardship for creation and the humans

therein, rests on a tripartite foundation. An interrelated economic/ecological system ordered by the axioms of efficiency, community, and compassion depends on competitive markets, social norms emphasizing the ecological virtues, and responsible governments. Each supports the other using complementary informational channels and incentive mechanisms to influence human behavior. We cannot advance one without the others. Pluralistic stewardship is a complex, multidisciplinary task.

The past decade's sharp movement toward competitive markets needs reinforcement, especially through the provision of complementary institutional and physical infrastructure to reduce transaction costs, promote domestic and international competition, and level the playing field between market participants. But we should not pin all our hopes on markets; their role is important but necessarily limited. We must simultaneously cultivate an ethic of individual and collective responsibility, for creation and its constituent species, not least of which for our fellow humans. Nash's (1991) ecological virtues deserve promotion throughout civil society, not least of which in churches and schools. As more people think globally and act locally, contemporary society can obviate the potential problems of imperfect markets and governments. Finally, governments need to continue to extricate themselves from meddling in domestic and international trade, and focus more on the essential tasks of providing public goods to improve information and understanding, to facilitate market exchange by lowering transaction costs, to defend competitive markets, to ensure macroeconomic stability, and to provide social safety nets against exogenous shocks and transfers across nations and generations. Participatory approaches to governance, based on the principle of subsidiarity, are key to governance that advances the aims of efficiency, community and compassion.

In summary, through markets, social norms, and governments, humanity can and must render environmental stewardship compatible with survival for poor households, else we face catastrophic

loss of the human and nonhuman elements of creation in large tracts of the low-income tropics. The past couple of decades have brought important advances in our understanding and operation of each of those three basic institutions. While the challenges are great, there is reason for hope.

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