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MARKETS AND THE ENVIRONMENT: A CRITICAL REAPPRAISAL

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The environmental problem is no different from any other economic problem. The basic problem is scarcity. Wants are unlimited while resources are limited. Once we recognize our inability to satisfy all of our ecological wants, how do we decide which wants we will satisfy? Most efforts to address environmental concerns have used political institutions to answer this question and to devise policy responses. Environmental concerns have been addressed in the same manner that socialist nations sought to address broader economic concerns.

This paper argues that such policies cannot succeed in the environmental realm any better than they did in the broader economic realm. Whether the political approach chosen relies on command-and-control or "market-based" mechanisms (eco-taxes or eco-quotas) matters little in resolving government's inability to prioritize. The dispersed nature and enormity of information needed to prioritize risks and the inability of government to create the rich system of incentives necessary to mobilize human ingenuity renders effective government controls infeasible.

This paper argues for greater attention to environmental problems but concludes that we can better address environmental quality by integrating ecological resources into the economy via ecological privatization. This property rights approach to environmental policy—"free market environmentalism"—may entice more economists to address the important environmental questions and devise more appropriate solutions.

I. INTRODUCTION

The nature of the environmental problem perhaps is best addressed by reviewing the economic problem. The basic economic problem is scarcity. Demands are unlimited while resources are limited. Most individuals live on a fixed budget and cannot buy everything they want. Therefore, they must make tradeoffs. By eating out, an individual may forgo seeing a movie or, worse, lack sufficient bus fare for work the next morning. Most people would prefer eating out, going to a movie, having bus fare, owning their favorite car, and living in a mansion. However, limited resources prevent meeting all desires. As an individual's resources increase, so will the demands upon those resources. The economic problem is never solved.

The environmental problem is no different from the economic problem. Our demand for environmental amenities is unlimited. We want no air pollution, no water pollution, no net loss of wetlands,

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ABBREVIATIONS
EPA: Environmental Protection Agency
TEAS: Tradeable Emission Allowance Systems

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no net loss of species, no global warming, no acid rain, no ozone depletion, and no risk. We want to live in a beautiful, pristine, and safe environment. However, our resources are limited. The costs of reaching preindustrial levels of air pollution (a goal of the Rio earth summit) are prohibitively high. Environmental groups' current campaign to ban chlorine would be extremely costly since chlorine exists in nearly 60 percent of all commercial chemicals (Fumento, 1994). The Delaney Amendment to the Pure Food, Drug, and Cosmetic Act mandated a zero tolerance level for carcinogens in foods (Simon, 1990). Achieving such levels of purity is too costly to be possible.

Once we recognize our inability to satisfy all of our ecological demands, how do we decide which demands we will satisfy? What is more important, African elephants or the ozone layer, recycling or population control, reducing carcinogens or increasing fuel efficiency? Is constructing a hierarchy of environmental values possible in a country of 250 million people or in a world of 5 billion? Of course not. People of the African countries identify the more pressing environmental problems as "disease, soil erosion, loss of soil nutrients, lack of sewage disposal and contamination of water by human bodily wastes, insufficient facilities for treatment of drinking water, and lack of refrigeration," while people in the developed countries identify "hazardous waste sights, water pollution from industrial wastes, occupational exposure to toxic chemicals, oils spills, and the destruction of the ozone layer" (Shaw, 1994). Clearly, environmental values differ greatly in different situations. Whose values will decide where our resources should be spent?

Once environmental values have been selected, how will we attain them? Should we select a board of environmental commissioners to manage the environment? Perhaps referendums should be used to achieve our ecological goals. We certainly will need a system that will adapt rapidly to new challenges and new priorities. With new situations will arise new values, new problems, and new possible solutions. How will we adjust to new demands? We must consider these questions in order to increase the supply of environmental amenities. Finally, we must realize that the environmental problem, like the economic problem, never will be solved. As environmental quality increases, so will our expectations. Our demands always will exceed our ability to satisfy those demands.

This paper argues for greater attention to the environmental problem and concludes that we can increase environmental quality with limited resources through a program that seeks to integrate ecological resources into the economy via ecological privatization. This approach, labeled free market environmentalism, is illustrated by an observation of John Kenneth Galbraith. Galbraith noted that U.S. homes and yards are lovely while politically managed streets and parks often are a mess. A proponent of big government, Galbraith advocated raising taxes on private homes and yards to improve the political sector. However, others would solve the problem by extending the concept of private ownership. That is, more of Planet Earth should be someone's backyard. More of the flora and fauna should be someone's garden or someone's pet. As Kenneth Boulding (1966, p. 231) suggested long ago, if the world is to survive, it must in a very general sense become "domesticated," and people must become "gardeners." Trees cannot have standing but behind every tree might stand a private owner.

This novel property rights approach to environmental policy may entice more environmental economists to address the important environmental questions. The focus on institutional rather than market failures continues the pioneering work of Hayek, Coase, and Demsetz.

II. THE MARKET FAILURE PARADIGM

Cowen (1992, p. 3) states, "The assertion of market failure is probably the most important argument for governmental intervention. At one time or another nearly every sector of the American economy has been branded as a market failure. Such assertions are usually based upon the theory of public goods and externalities." The dominant view in the environmental policy arena is that only political management offers any hope of addressing the world's environmental problems. Environmental problems result from "market failures." Economic activities negatively impact the environment, but since such effects are "external" to the market, they are ignored. Since markets "fail" to consider external impacts, we must rely on political institutions to remedy the situation. This logic requires politically controlling all economic activities that have environmental consequences.

Unfortunately, all economic activities have environmental consequences. Therefore, the theory of market failure implies political control over the entire economy. Is this course necessary? Should we sacrifice the economy to save the environment? Of course not. The mere fact that markets "fail" (or, at least, fall short of our expectations) does not mean that political institutions will succeed. In the real world, all institutions are flawed and prone to error. As the experience of Eastern Europe suggests, the pitfalls of government failure are far greater than those of the market.

III. FAILURES IN THE POLITICAL MARKET

A. *Efficiency Failures*

The 40-year European experiment on whether centralized planning or the free market better advances human welfare is finished. Centralized planning plunged the nations of Eastern Europe into the murky abyss of state management and sluggish economic growth. Economic efficiency without economic freedom is impossible.

Yet, today, the world seems prepared to repeat the disaster. Again we are told that individual liberty must be subsumed to the collective good. Again we are told that individual freedom is incompatible with human welfare. This time, however, we are told that we must sacrifice freedom to save Planet Earth.

Environmental concerns are so important that they must not be politicized. But that is exactly what we are doing: we seek clean air or water in the same way that the planned economies of Eastern Europe sought to produce wheat and bread. Political experts determined "desired" output levels, bureaucrats developed detailed plans, and the orders were issued to producers. This process is dominant in the environmental field: government determines environmental quality levels, creates detailed plans, and issues orders.

Eastern European nations did produce some wheat, and our environmental protection agencies have achieved some environmental gains. However, the market failure explanation of pollution suffers from serious empirical problems. If pollution is the result of markets' failing to consider environmental values, then the nonmarket economies of the world should have fewer environmental problems. Czechoslovakia and Hungary, for example, should have fewer environmental problems than do France and Germany. However, market economies have been far more friendly to the environment. Bernstam (1991) shows that per dollar of GNP, socialist economies use nearly three times as much energy as do market economies. Former East Germany consumes 40 percent more energy per person and more than 3.5 times as much energy per dollar of GNP than did West Germany. North Korea uses 70 percent more energy per capita than does South Korea. Because market economies use resources more efficiently, they meet human needs with less

environmental stress. On the other hand, political management fails to engage the citizenry's creative energies. For economic development to continue with the least environmental impact, we must rely on natural market forces, not on political controls.

B. *Priority Failures*

The environmental challenge is to determine goals and priorities, not how to attain them. The problem in the environment is not that we are doing the right things foolishly, but that we are doing far too many foolish things. As the Environmental Protection Agency (EPA) has moved from controlling a handful of major water and air pollutants to controlling hundreds of trace elements, its problems have increased. EPA initially aimed at controlling small, relatively simple problems, such as lead gasoline. Political controls were clumsy but somewhat effective. Today, however, the EPA seeks to control many trace pollutants and theoretical health risks (several hundred in the latest Clean Air Act). This task is far more complex and far less responsive to political resolution.

The EPA has had difficulties setting priorities. As newspaper headlines shift attention, so does the EPA. Clean water, clean air, acid rain, hazardous waste, noise pollution, endangered species, wetlands, drift nets in the Pacific, smog in Los Angeles, Amazon forests, the ozone hole over Antarctica, pesticides, biotechnology, global warming—all have been priorities at one time or another. Policymakers enact laws and regulations without careful analysis, the public conscience is eased, and a new issue captures the headlines. Because of the erratic and inconsistent nature of politics, legislators focus on enacting laws rather than on cleaning up the environment.

An internal study entitled *Unfinished Business* shows that the EPA has failed to establish environmentally defensible goals. It found EPA's ranking of environmental risks irrational and incoherent (U.S. EPA, 1987). The study included two lists: what EPA was spending money and staff on and what EPA wanted to spend money and staff on. Interestingly, the list were almost exact opposites. The priorities that emerged out of an environmental rating were the reverse of those that emerged from a political rating. EPA is a political organization and responds to political, not necessarily ecological, incentives.

Landy and Thomas (1989) find that the Superfund program wasted vast sums of money on cleaning up "hazardous" waste dumps. EPA ignored evidence that the dumps posed negligible risks. Superfund, however, remains a priority program because it addresses popular fears, provides "free" money to local communities, and contains few objective criteria to discipline spending. These problems increase as EPA moves into more policy areas.

Political solutions to environmental problems inevitably respond to political rather than ecological concerns. Only when the two coincide are the programs successful. That rarely happens. Because environmental issues rouse passionate responses, politicians respond to emotion, not scientific evidence. Too often, the sensational trumps the serious. We focus on parts per billion of theoretically carcinogenic materials rather than on the real threat of bacterial contamination. In the past, EPA has spent large sums of money controlling Alar, asbestos, dioxin, and radon. In each case, action has taken precedence over scientific evidence. In this environment, establishing rational priorities has not been easy.

C. *Public Choice Failures*

EPA has become part of the problem by aggravating fears rather than promoting science-based reassurances. EPA has suppressed information suggesting that environmental problems are less serious than

previously thought. Examples abound: withholding urban air pollution statistics that show dramatic improvements until after passage of the Clean Air Act, blocking the release of the National Acid Precipitation Assessment Project that showed acid rain to be rather benign, refusing to clarify the "carcinogen" dioxin's risks. After all, the EPA serves its best interest by intensifying irrational fears through disinformation. This approach is the surest way to increase the budget. An agency that alleviates fears, thereby diminishing its importance, may face major cutbacks.

Moreover, government policy is subject to manipulation and control by special interests. These interests seek private gain at the public's expense (Greve and Smith, 1992). The U.S. government now spends nearly $150 billion annually on the environment (U.S. EPA, 1990). The recent Clean Air Act will increase this figure substantially. Money attracts interests who seek to minimize their costs or penalize their competitors. As a result, the EPA has become a major forum for special interest pleading. Alternative fuels, solar power, electric cars, mass transit, reforestation, and energy conservation all have benefited from federal subsidies.

One of the best examples of political interests running rough-shod over environmental concerns is the EPA's ethanol mandate. A coalition made up of environmentalists, the Renewable Fuels Association, the Clean Fuels Development Coalition, the National Corn Growers Association, and the Archer Daniels Midland Company, which is the largest domestic producer of ethanol and the only company with both Republican and Democratic backing, achieved a *de facto* ethanol mandate by acquiring a minimum oxygen requirement that was possible only with an ethanol mixture. However, ethanol, is hardly an environmentally benign fuel (Adler, 1992).

Pork barrels are easier to fill if painted green. The EPA's recent ethanol decision shows that political moonshine remains very potable in Washington. Political pariahs (e.g., the oil and automobile industry) are hit hard, while the politically preferred (e.g., farmers, environmentalists, and alternative fuel interests) are treated lightly and preferentially. The ethanol incident demonstrates "that legislators were prepared to go to extraordinary lengths in creating a market for ethanol, regardless of the environmental results" (Adler, 1992, p. 39). "The result is a regulatory regime of mind-boggling complexity, a web of standards, mandates, requirements, and timetables that is incomprehensible to all but a handful of bureaucrats and to representatives of the interests that are being regulated or served" (Adler, 1992, p. 39).

IV. THE MYTH OF PUBLIC PARTICIPATION

Public participation encourages specific "publics" or interests to get involved. Most of us are too busy to learn about the many political issues and to understand all of the scientific, political, and economic implications of government policy. As a result, only those groups who are motivated by economic or ideological interests participate in the process. Yandle (1983) describes such political coalitions as "Bootleggers and Baptists" and notes that they are found in almost all policy struggles.

Because of the knowledge gap between the public and those motivated by necessity to be informed, bureaucrats and special interests are able to misuse or ignore scientific and economic evidence to advance their agenda. The acid rain issue is a good example. Acid rain was believed to be the cause of dying forests in much of the United States and Canada. Congress commissioned a 10-year, $570 million study to evaluate its effects. This National Acid Precipitation Assessment Program found "no evidence of widespread forest damage from current ambient levels of acidic rain in the United States." Congress, the President, and the EPA ignored the

study and passed an acid rain program anyway. The program will cost between $3 and $7 billion and will lead to more than 200,000 lost jobs (Adler, 1992, p. 41).

Other programs also have been completely ineffective and often unnecessary. Superfund, a waste site cleanup program created after toxic waste was discovered beneath the community of Love Canal, New York, is the epitome of bad science and political pork. Every state was guaranteed a clean up site regardless of EPA's risk assessment rankings. The risk assessment criteria are fantastically over-cautious. The program assumes that children will be present, will live at the site for 70 years, will ingest approximately a teaspoon-full of dirt a day, and will use only contaminated ground water for bathing and drinking (Jeffreys, 1994). The two famous (or infamous) Superfund sites, Times Beach and Love Canal, were both evacuated and cleaned up at enormous cost. Later the EPA admitted that the risks posed were nearly zero and did not justify the actions taken. However, Superfund continues to expand in spite of its dismal record.

In sum, the effort to control pollution politically is encountering many problems. Costs are high, and success is limited. Priorities are irrational and inconsistent. Special interest groups are becoming more adept at steering policy to advance their own interests. None of this leads to effective environmental policy for the United States.

V. BACKLASH

Environmental policy failures are creating an opportunity for reform. The costs of current policies are becoming evident. The easy "haystack" problems have been solved, and the political pariahs have been purged. The remaining "needles in the haystack" now are impacting politically preferred polluters. As Henderson (1994, p. 50) says, "Environmental regulations have reached beyond factory smokestacks and corporate dumpers. Now they can prevent a congregation of 120 Baptists in Florida from building a church and a retired couple in Michigan from constructing a home on a lakefront lot they've owned for 25 years." EPA's need to expand its power is affecting larger segments of society and thus is beginning to have political repercussions.

Environmental policies have blocked economic growth in communities and, in some cases, in whole regions of the United States. The Endangered Species Act has closed off millions of acres of timberland, depriving thousands of Pacific Northwestern families of their livelihood. It also has been used to divest property owners of the use of their land. Superfund has transformed former industrial regions into non-development zones known as "brown fields." Bill Ellen, a marine and environmental consultant, was overseeing the construction of wetlands that would serve as a hunting and conservation preserve. However, he was arrested and sent to jail for six months for destroying wetlands. His crime was dumping two truckloads of dirt on dry land (Orient, 1993).

Criticism has led to a growing interest in reform. Most of the debate focuses on the introduction of "market mechanisms"—that is, regulatory taxes or quotas. Environmental goals still will be set politically, but market forces will be harnessed to achieve efficiency. Market mechanisms supposedly offer a third alternative between political controls and free markets. The options of this third way include pollution taxes (eco-taxes), tradeable emission rights (eco-quotas), deposit systems, full cost pricing, demand-side management, user fees, and so forth.

VI. THE CASE AGAINST "MARKET MECHANISMS"

Ludwig von Mises (1949, pp. 706–707) clearly states why the advocates of market mechanisms are deluded:

> What these neosocialists suggest is really paradoxical. They want to abolish private control of the means of production, market exchange, market prices, and competition. But at the same time they want to organize the socialist utopia in such a way that people could act as if these things were still present. They want people to play market as children play war, railroad, or school. They do not comprehend how such childish play differs from the real thing it tries to imitate.

In other words, it is foolish to believe that the incentives present in the market can be duplicated in the absence of property rights. People will not act as if they are property owners if they do not own property. Without something to sell and without the possibility of personal gain, people ignore market signals. De Jasay (1990, p. 16) states that the "socialist countries that tried to abandon the command economy without also re-defining and de-centralizing property rights...found themselves with an economy that heeded no signals of any sort." The market socialism that socialists like Lange, Lerner, Leiberman, Le Grand, and Estrin outline, or that Yugoslavia attempted apparently does relate to tradeable quota systems and other market-based policies.

The Tradeable Emission Allowance Systems (TEAS) also has problems. First, TEAS, like other market socialist experiments, do not adequately define property rights. A property right must be securely defined and guaranteed in order to exist. If it is not, then an actor in the market will not respond to market signals. In the case of TEAS, property rights are not secure. Permits are issued by law and, therefore, can be expropriated by law. The property right is as unstable as the mood of the American electorate.

Second, government can re- or de-value the permits. After setting a baseline (the amount of pollution allowed), Congress may decide that the estimate was wrong. One may think that too much pollution still occurs or that the baseline is too stringent. If pollution is still considered too high, then the number of permits will be reduced, and companies will lose part of their pollution quota. If the baseline is considered too low, then additional permits will be issued, decreasing their value and hurting permit holders. If government leaves the baseline alone, property rights might be considered secure, and the system might work. However, a government that insists on tinkering introduces uncertainty. Those operating in the "market" will not respond to market signals because property rights are insecure or nonexistent.

For property rights to be secure in a politically created market, the world would have to be static. Once the optimal baseline is discovered, no need for change would exist, and achieving security would be possible. However, determining the optimal baseline in the real world where dynamic and uncontrollable forces always are at work is impossible. Suppose that it were possible to discover all of the necessary information—such as people's values, amounts of pollution produced, geological and climatological forces, available technologies, available resources—to make all the necessary calculations. Also suppose that it were politically possible to implement the results. By the time policy was set in motion, conditions would have changed, and the information would be irrelevant.

Of course, this is the fundamental flaw in all socialist schemes, that F. A. von Hayek (1945) shows. Socialist planners of all shades, both red and green, have failed to overcome this problem. One of the foremost advocates of market-based policies, Frances Cairncross (1992, p. 100), acknowledges this problem:

> It is almost impossible to set them [pollution taxes] at the 'right' level....That magic point, at which the costs of pollution prevention catches up with the benefits, is hard

> enough to discover even on paper. To hit it by setting taxes at precisely the right level is even more difficult. Keeping taxes at that right level, year after year, is probably impossible.

And the same holds true for setting a baseline for TEAS.

Finally, pollution permits erect barriers of entry into the market. New companies may be unable to enter the market because no permits are available. Existing companies with surplus permits will not likely sell to potential competitors. Essentially, TEAS introduce anti-competitive dynamics into the market that shield older, inefficient companies from competition by new, innovative, and more efficient companies. In the long run, protecting existing companies may mean more pollution. Stifling competition does not allow for the "survival of the fittest"—that is, survival of the most efficient and least polluting. Politically created markets effectively crowd out other market forces that achieve, without intention, pollution reduction. Timothy Wirth (Wirth and Heinz, 1988 and 1990), the former Colorado Democrat who introduced Project-88, a tradeable emission quota system, stated, "This report is an attempt to put a 'green thumb' on Adam Smith's invisible hand." However, there is no need to put a green thumb on the invisible hand. It already has one.

VII. THE "RIGHT" TO POLLUTE VS. THE COMMON LAW

Environmentalists argue that TEAS create a right to pollute. Many environmentalists view pollution as a sin, and this newly concocted and politically enforced right offends them. Economists dismiss this argument despite its validity. Pollution is not a sin, but issuing a right to pollute to one violates the property rights of another. One cannot consider waste or emission pollution until it travels onto another's property or causes nuisance to another person. As long as a person or company internalizes waste by disposing of it on one's own property or paying another for waste disposal rights, pollution does not occur. Pollution only occurs when one dumps waste without permission on another's property.

In truth, all types of environmental policy, both command-and-control and market-based policies, legalize pollution. Current legislation has corrupted the common law maxim, "So use your own property as not to injure the property of another," to allow legally permissible amounts of pollution. Individuals are deprived legal recourse against property damage. Under common law, property rights reign supreme. One cannot dispose of waste on another's property without permission. If one does so, the damaged party can sue for redress. Under the current system, the government sanctions politically determined levels of pollution. Since pollution to a certain level is legal, it no longer is actionable. Market-based policies infringe upon property rights and ignore the most effective means of pollution control (Meiners and Yandle, 1992).

The serious problems that plague the EPA would remain under a system of market-based policies. Market-based policies essentially are designed to induce companies to reduce pollution in a more efficient and cost effective manner. However, they do nothing to address the political problems inherent in government-determined environmental quality. Policy mechanisms such as quotas and taxes still determine the optimal amount of pollution. Priorities still are set politically. EPA's inability to set rational goals will not be corrected. EPA's incentives to misuse science and fan popular fears will continue. In short, the entire irrational and perverse incentive system that exists at EPA will remain intact. Genuine environmental problems will continue to be overlooked while the sensational will capture the headlines and influence policy.

VIII. FREE MARKET ENVIRONMENTALISM

The fundamental conflict over who controls the use of our air, water, and landscape cannot be decided merely through a change in the instruments of enforcement. We must be willing to change the institutions by which these conflicts are solved. Environmental problems present dynamic and intricate puzzles. Even altruistic central planners who are immune to politics cannot accumulate the necessary information that will lead to the correct solutions. But central planners are not immune to political influence, and their inability to accumulate information combined with perverse incentives leads to disastrous environmental consequences. Fortunately, there is a better way. Markets provide a means of solving the knowledge problem, and property rights establish the proper incentives necessary to care for the environment, thereby satisfying our demands for environmental amenities. Speaking of the knowledge problem and its solutions, Israel M. Kirzner (1984, p. 416) states,

> [The] entrepreneurial element in human action is what responds to the signals for pure profit that are generated by the errors that arise out of the dispersed knowledge available in society. It is this yeast that ferments the competitive-entrepreneurial discovery process, tending to reveal to market participants more and more of the relevant information scattered throughout the market. It is this entrepreneurial-competitive process that thus grapples with that basic knowledge problem we found inescapably to confront central planning authorities. To the extent that central planning displaces the entrepreneurial discovery process, whether on the society-wide scale of comprehensive planning or on the more modest scale of state piecemeal intervention in an otherwise free market, the planners are at the same time both smothering the market's ability to transcend the basic knowledge problem and subjecting themselves helplessly to that very problem. The problem's source is Hayek's dispersed knowledge: Central planning has no tools with which to engage the problem of dispersed knowledge, and its very centralization means that the market's discovery process has been impeded, if not brought to a full halt.

Allowing the market free rein solves the knowledge problem. Securing property rights instills the proper incentives. The owner of environmental amenities will employ those amenities first so as not to infringe on others' rights and second so as to satisfy the demands of potential users of the amenity. Whatever the decided use, owners would be foolish to wantonly destroy or waste the resource for short-term profit. Rather, cultivating, conserving, and renewing the resource for future income better serves their interest. This is the definition of good stewardship, and the only way to achieve "sustainable development."

An example from Canada's history illustrates the point (see Demsetz, 1967). In pre-colonial times, beaver were plentiful throughout the territory that would become Canada. Native American demands upon the beaver were low and therefore represented little threat to the beaver population. When French fur trappers arrived, conditions changed. High demand for beaver pelts in Europe along with French technologies, such as guns and traps, greatly improved hunting efficiency and had serious effects. Trapping rapidly expanded, sharply reducing the beaver population.

The indigenous populations were aware of this problem and met to resolve the issue. Traditionally, beaver had been common property—any beaver could be taken by anyone. That system worked well while demand was low and supply high. However, the arrival of Europeans made the system unsustainable. To meet increased demand while preserving the beaver, the Native Americans instituted property rights by giving each family

group an area containing at least one beaver lodge. In effect, the beaver were privatized. Rules for dispute settlement and policing procedures also evolved. Families that over-exploited their resource immediately suffered the economic consequences, while those that used their beavers wisely prospered. Property rights ensured sustainability and restored the balance between people and beaver—a balance that survived until the English arrived and the property rights system collapsed. After that, the beaver were hunted near extinction.

This story suggests that private stewardship of environmental resources is a powerful means of ensuring sustainability. The best way to preserve the environment is through ecological privatization by which environmental priorities can emerge in a sensible and rational manner.

The evolutionary manner in which property rights emerged among the northern Native American tribes illustrates an important point. Before beaver pelts became valuable as a commodity in Europe, the common property system worked well. The relatively low human population together with the low value use of beaver as a food or clothing source meant that the externalities present in a common property system were small enough to negate the need for property rights. In other words, the fact that any beaver could be taken by anyone at any time posed no threat to the survival of the beaver. The increased value of beaver pelts and the arrival of more people with better technology raised externality costs to a point where they exceeded the cost of implementing and enforcing property rights. Ecological privatization became necessary to internalize the externality and to preserve the existence of the beaver for both current and future profit opportunities.

Establishing property rights gives incentives to use resources in a sustainable fashion. On the other hand, through the exchange process, resources will rise to their most highly valued use. If a resource becomes scarce, the price will rise, and demand will decrease. Furthermore, substitutes will be sought in order to satisfy the demand for that resource function. Many times the substitute will be better than the original. The absence of exchange mechanism and property rights creates a system of "groping about in the dark," as von Mises puts it.

The case for free market environmentalism is rather simple for those resources for which property rights are easily defined and exchanged. However, for more difficult environmental areas, defining property rights appears to be impossible. Robert Stavins (1989, p. 96) asks, "Does anyone really believe that acid rain can be efficiently controlled by assigning private property rights for the U.S. airshed and then effecting negotiations among all affected parties?" Certainly fencing off one's land or patrolling it to deter poachers, litterers, and other undesirables is one thing. It is quite another to keep unauthorized fishing boats out of one's stretch of ocean or to identify the source of pollution that is damaging ones orchard or lungs.

How do we "fence" the airshed, ground water, or oceans? This feat appears as difficult to us now as did the fencing of the Western frontier in the 19th century. In those windswept arid plains, substantial acreage was needed to sustain a family, and building wooden fences or stone walls to "privatize" land was prohibitively expensive. A critic in the 1850s would have argued that in such a situation no property rights solution was feasible, just as Stavins argues today regarding air and water. Yet the problem of property rights in the West was resolved through voluntary actions. Institutions evolved that defined and protected property rights. Ultimately, a technology—barbed wire—greatly reduced the costs of marking property boundaries (Anderson and Hill, 1975).

Technologies now exist that make possible determining, within limits, the quantity and types of air pollution entering a region. Lasimetrics, for example, could map atmospheric chemical concentrations from orbit. In time, that technology might provide a sophisticated means of tracking cross-boundary pollution flows. Also, large installations such as power plants could add (or be required to add) chemical or isotopic "labels" to their emissions to facilitate tracking. Such "labeling" has long been routine in explosives manufacture to help trace explosives used in crime or terrorism.

The market is not perfect, but it is the best solution to our ecological problems. Only under a system where resources are privately held will people have the ability to accurately express their environmental values. Only through a price system will those values be conveyed to entrepreneurs who can in turn satisfy those values.

IX. CONCLUSION

The focus on "economic instruments" is misguided. Tools per se do not improve society. The guillotine did not make France more just. Instead, we need to focus on institutions. Through comparative institutional analysis of different schemes for wildlife protection and other ecological resource management, we can discover better solutions (see Simmons and Krueter, 1989; Jeffreys, 1991; Smith, 1988; Leal, 1993; Adler, 1993).

Such studies could be carried out in other areas to determine the appropriate means to protect resources. For example, analysts should compare the rates of technological change in resource management in both the free market and in the politically managed environment. Interdisciplinary research such as economic analysis of traditional societal management regimes (cultural anthropology remedies) also might be valuable (Cordell, 1989). Current legal and other impediments (uniform national standards, disallowal of ownership, inability to risk contract) that inhibit private stewardship arrangements should be studied. Finally, policymakers need to understand the evolution of the common law, to explore how such traditional property rights defenses might be restored and strengthened, and to examine the various ways the common law addresses the "many/many problem" (many creators of a cost, many parties impacted by that cost). For example, privatized highways would make owners of the highway liable for emission levels (from cars). The owner would decide how to allocate such costs to road users. Neighborhood associations might determine what level of air quality would be sought and would bargain accordingly (Anderson and Leal, 1991). Malls might decide what level of amenity their customers will be afforded since mall customers "consume" air conditioning and other "public goods." Generally, such costs are paid indirectly via surcharges to the various tenants. If costs mount, then common spaces may shrink, and common amenities may be scaled back.

Coase (1988) mentions that his criticism of neoclassical economists has not been well understood—specifically his criticism of the Pigouvian tax. Even Baumol, a friend of his, did not quite get it. Baumol argued that the logic of a tax and subsidy system as discussed by Coase is "impeccable." However, we do not know how to calculate such taxes and subsidies or how to approximate them by trial and error. "This I have never denied," replies Coase. "My point was simply that such tax proposals are the stuff that dreams are made of. In my youth it was said that what was too silly to be said may be sung. In modern economics it may be put into mathematics." (Coase, 1988, p. 185)

It's time to stop being silly and start thinking seriously about what we might do to improve the planet on which we live.

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