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Pollution Trading Permits as a Form of Market Socialism and the earch for a Real Market Solution to Environmental Pollution

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POLLUTION TRADING PERMITS AS A FORM OF MARKET SOCIALISM AND THE SEARCH FOR A REAL MARKET SOLUTION TO ENVIRONMENTAL POLLUTION

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INTRODUCTION

The concept of the marketable pollution permit ("MPP")[1] has become an increasingly popular topic of discussion for environmentalists in recent years, although the idea has been in existence since at least 1968, when J.H. Dales published a book on the issue.[2] This approach was given added credibility when Congress enacted the Clean Air Act Amendments of 1990,[3] which made the concept an official part of environmental regulatory policy. A typical solution in this area is for the government to mandate that a certain kind of pollutant in a specified geographic area be reduced by a defined target percentage within a certain time period. Essentially, such nostrums are based on a centralized command system rather than the market place.

Establishing a market in tradeable pollution permits triggers "quasi" market forces. This leads to a more efficient allocation of resources than traditional command and control alternatives and makes it possible to achieve the goal of reducing emissions at a lower cost. Firms that cannot achieve the targeted level can purchase a permit from the party whose reduction exceeds the mandated amount. As such, there is an incentive for each party to reduce pollution below the

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1. This scheme also goes by the names tradeable emission rights ("TERs"), tradeable pollution rights ("TPRs") and tradeable emission permits ("TEPs").

2. JOHN H. DALES, POLLUTION, PROPERTY & PRICES (1968). Other treatises on this subject include: BUYING A BETTER ENVIRONMENT: COST-EFFECTIVE REGULATION THROUGH PERMIT TRADING (Erhard F. Joeres & Martin H. David eds., 1983); THOMAS H. TIETENBERG, EMISSIONS TRADING: AN EXERCISE IN REFORMING POLLUTION POLICY (1985); Robert W. Hahn, *Innovative Approaches for Revising the Clean Air Act*, 28 NAT. RESOURCES J. 171 (1988).

3. Pub. L. No. 101-549, 104 Stat. 2399 (1990). These amendments modified the Clean Air Act of 1977, 42 U.S.C. §§ 7401-7642 (1988). Previous acts included the Air Pollution Control Act of 1955, Pub. L. No. 84-159, 69 Stat. 322 (1955); the Clean Air Act of 1963, Pub. L. No. 88-206, 77 Stat. 392 (1963); and the Clean Air Act Amendments of 1970, Pub. L. No. 91-604, 84 Stat. 1676 (1970), among others.

legally required level so that the permits not being utilized can be sold.

However, this solution has encountered some problems. Excessive regulations and regulator attitudes have essentially destroyed the evolution of a well-functioning permit market. Furthermore, as presently advocated and applied, the system is structurally unsound, since it places reliance on command rather than market incentives—which is really just a form of market socialism, a system that von Mises[4] and Hayek[5] criticized in the 1920s and 1930s.[6]

This Article applies market theories to the problem of pollution. Accordingly, it maintains that while market socialism (*e.g.*, tradeable emission rights) is preferable to central commands, a system of fully protected private property rights is superior to both.

I. THE POLLUTION TRADING PERMIT APPROACH

Strictly speaking, there are two economic systems, the capitalist market system and socialism. Capitalism relies on voluntary exchange and the recognition of property rights. The socialist alternative relies on force or the threat of force and therefore necessarily entails the violation (or nonrecognition) of property rights. The market system has been shown to be more effective in allocating scarce resources for a number of reasons.[7] It relies on a price system, that acts as a signalling mechanism to convey information to market participants.[8] Socialism, on the other hand, relies on centrally directed command.

4. Ludwig von Mises, *Economic Calculation in the Socialist Commonwealth*, *in* COLLECTIVIST ECONOMIC PLANNING 87 (Friedrich A. Hayek ed., 1935) [hereinafter *Economic Calculation*]; LUDWIG VON MISES, SOCIALISM: AN ECONOMIC AND SOCIOLOGICAL ANALYSIS (1951) [hereinafter SOCIOLOGICAL ANALYSIS].

5. Friedrich A. Hayek, *The Nature and History of the Problem*, *in* COLLECTIVIST ECONOMIC PLANNING 1 (Friedrich A. Hayek ed., 1938); Friedrich A. Hayek, *The Use of Knowledge in Society*, 35 AM. ECON. REV. 519 (1945), *reprinted in* THE ESSENCE OF HAYEK 211 (Chiaki Nishiyama & Kurt R. Leube eds., 1984); FRIEDRICH A. HAYEK, INDIVIDUALISM AND ECONOMIC ORDER (1948); Friedrich A. Hayek, *The Pretence of Knowledge*, Nobel Memorial Lecture delivered in Stockholm, (Dec. 11, 1974), *in* LES PRIX NOBEL EN 1974 (1975) and *in* THE ESSENCE OF HAYEK 266 (Chiaki Nishiyama & Kurt R. Leube eds., 1984).

6. For a more recent exposition on the inefficiency of market socialism, see ANTHONY DE JASAY, INST. OF ECON. AFF., MARKET SOCIALISM: A SCRUTINY 'THIS SQUARE CIRCLE' (1990); HANS-HERMANN HOPPE, A THEORY OF SOCIALISM AND CAPITALISM: ECONOMICS, POLITICS AND ETHICS (1989).

7. We will not go into a detailed review of the empirical evidence to support this position. Even a cursory look at the effects that a socialist economic system has had on the former Soviet Union and the states in Eastern and Central Europe will convince all but the most devoted socialist that the market system does a better job of creating wealth and allocating resources than does socialism. For reasons supporting this premise, see THE MARKET SOLUTION TO ECONOMIC DEVELOPMENT IN EASTERN EUROPE (Robert W. McGee ed., 1992); SOCIOLOGICAL ANALYSIS, *supra* note 4.

8. Any price theory text provides a detailed explanation of how the price system works. Microeconomic texts also devote substantial space to the workings of the price system.

However, because the information is so broadly disseminated, it is impossible for a central authority to gather and digest the information essential to decisions resulting in the efficient allocation of resources. Yet, the market system performs this function automatically. A number of commentators have discussed this phenomenon in depth, so there is no need to repeat it here.[9]

Until recently, the command system was used almost exclusively to control pollution. As a result of the shortcomings of that system, the problem still exists. However, researchers are currently trying to find ways to inject market forces into the area of pollution abatement, recognizing the effectiveness of this approach over central planning.

One way to unleash market forces is by the use of tradeable emissions rights ("TERs"), which are permitted under the 1990 Clean Air Act Amendments. Under a command system, all businesses and communities would have to collectively and individually meet whatever tests and pollution reductions government commanded, while under a market permit trading system, reduction goals could be achieved more flexibly. For example, suppose a hypothetical law required all electric power plants to reduce sulfur dioxide emissions by thirty percent over a two-year period and that the decrease would have to be achieved by using smokestack scrubbers. Under the command system, every power plant would have to achieve the thirty percent reduction regardless of cost. Plants with older technology might find it very difficult and expensive to meet the target. Newer ones might achieve it at a much lower cost.

However, under a market-driven system, the goal could be achieved more efficiently. Here, the goal could still be a thirty percent overall reduction, but individual plants would have more flexibility in trying to meet it. They could each try to find the least costly way to achieve the goal. Assume that there are ten power plants of equal size in the region producing a total of 100 million tons of emissions, or 10 million tons each.[10] Under a permit trading regime, plants have several options. While the total emission reduction must be 30 million tons, the individual plants do not necessarily have to use scrubbers to achieve their allocable share of the reduction. They can use other means if they can find a better way. For example, they might be able to switch from burning coal to using natural gas, electricity or water power. Or they might find ways to burn their coal more efficiently. The price

9. *See supra* notes 4 and 5; THOMAS SOWELL, KNOWLEDGE AND DECISIONS (1980).

10. *Cf.* BRUCE YANDLE, NATIONAL CHAMBER FOUNDATION, A PRIMER ON MARKETABLE POLLUTION PERMITS (1991). The Clean Air Act Amendments call for a 50% reduction in sulfur dioxide emissions.

system will send them the signals they need to make the correct decision.[11]

However, under a permit trading regime, each plant does not have to achieve a thirty percent reduction. Efficient plants could find ways to reduce their emissions by forty percent, and could sell their excess ten percent to one that is having difficulty achieving its thirty percent required reduction. In effect, efficient plants could sell pollution "rights" to their inefficient colleagues. Clearly, because of this market incentive, efficient plants might find it profitable to reduce emissions in their facility by more than that required by law so that they could sell their right to pollute to someone else. For example, if a plant could reduce its emissions by an extra ton at a cost of $300 and could sell this pollution right for $1000, the incentive to reduce emissions would result in turning liabilities and expenses into assets and revenues. If the price of MPPs becomes sufficiently attractive, some polluters may find it more profitable to shut down their facility and sell their permits than to remain open. This is a further incentive that does not exist under a command system.

Moreover, pollution could also be reduced by another market force. Environmental groups could use the funds they now expend on litigation, public relations and advertising to purchase some emission rights themselves. If such groups bought ten percent of the total permits in an area and then simply declined to resell them, total pollution could be reduced by that amount. These organizations might even be able to increase the amount of private funding they receive (thus making more funds available for buying yet additional trading permits) if they engaged in this kind of activity, since some individuals hesitate to contribute to them now because the motives of some environmental groups are suspect.[12]

If it appears that MPPs are a good investment, speculators might enter the market and purchase some permits in the hope that the price would rise. While they are waiting, the permits lie dormant, which also would serve to reduce discharges.[13]

Once these quasi-market forces are allowed to function, mutually beneficial exchange will trigger the free enterprise system to find new

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11. Economists sometimes say that the price system sends signals to convey information to the marketplace. What this suggests is that the market ranks alternatives in terms of a common denominator—price. For example, if a particular company could achieve its pollution reduction goal by using scrubbers (at a cost of $10) by switching to natural gas (at a cost of $20), or by burning coal more efficiently (at a cost of $30), it will choose to use scrubbers because this is the lowest cost alternative.

12. Some potential contributors avoid environmental groups because of the perception that they are utopians, crackpots or anti-free enterprise. This view would change if these groups could show, by their actions, that they use their funds to reduce pollution rather than dismantle the free enterprise system through excessive regulation and litigation.

13. YANDLE, *supra* note 10, at 10.

ways to achieve goals at minimum cost. Specialization and division of labor, coupled with the unanticipated discovery of more efficient production methods will expand the market, causing benefits to increase and costs to fall. According to one conservative estimate, adopting the trading permit approach to sulfur dioxide emissions in the United States may lead to as much as a twenty percent decline in electric utility costs over what would have been the case under a command system.[14]

Several studies have found that changing from commands to markets can produce dramatic cost reductions. Below are summaries of some empirical studies of air pollution control.[15]

Pollutant	Industry	Percent Cost Reduction
Particulates	Power	83%
Sulfur dioxide	Power	50%
Sulfates	Steel, Petroleum, Power	9%
Nitrogen oxide	Steel, Chemicals, Oil	83%
Hydrocarbon	DuPont Chemical	76%
Particulates	All sources	76%
CFC	Refrigeration (plastics)	50%
Sulfur dioxide	Power	77%
Nitrogen oxide	Power, Steel, Oil	93%
Sulfur dioxide	Power, Steel, Oil	44%
Particulates	Power, Steel, Oil	95%

Another advantage for markets over command systems concerns the behavior of managers. Rather than spending their time and effort dealing with government bureaucrats and trying to manipulate the system to their advantage, managers can utilize their resources and energy to develop more efficient ways to run their businesses. Thus, while a command system rewards politically gifted managers, the market system rewards production and results. Over time, this difference in incentives produces a new managerial breed. Entrepreneurial managers tend to take the place of bureaucrats, and bureaucrats tend to change into entrepreneurial managers.

II. A Property Rights Approach

While marketable trading permits are a definite improvement over commands, they can be criticized on a number of counts.[16] One fault

14. *Id.* at 6. This estimate is conservative because it does not take into account the fact that market forces, over time, will continue to push down costs as a result of the discovery of new techniques.

15. *See id.* at 9a (summary of these studies).

16. *See, e.g.*, Terry L. Anderson & Donald R. Leal, Free Market Environmentalism (1991), especially 147-51, 158-59; Anne Sholtz & Kenneth Chilton, Center for the Study of Am. Bus., Acid Rain and Tradeable Permits: How Congress Hobbles the Power of the Marketplace, Occasional paper 83 (1990).

is that government diminishes the effectiveness of the permit trading system through regulation,[17] which replaces the market with a bureaucratic command structure. As a result, whenever there is a "failure," it is labeled a "market failure," when in fact it is a governmental failure.[18] Another difficulty is that if we took the *Project 88* approach[19] in a world of pervasive externalities, there would be a need for thousands of government-created and monitored markets for specific pollutants such as SO_2, CO, CO_2, particulates, NO and NO_2, not to

17. For a specific discussion on this point, see Robert W. Hahn & Roger G. Noll, *Barriers to Implementing Tradable Air Pollution Permits: Problems of Regulatory Interactions*, 1 YALE J. ON REG. 63 (1983); Robert W. Hahn & Gordon L. Hester, *Where Did All The Markets Go? An Analysis of EPA's Emissions Trading Program*, 6 YALE J. ON REG. 109 (1989).

18. *See* THE THEORY OF MARKET FAILURE: A CRITICAL EXAMINATION (Tyler Cowen ed., 1988); Charles Wolf, Jr., *Market and Non-Market Failures: Comparison and Assessment*, 7 J. PUB. POL'Y 43-70 (1987). The theory of market failure involves a non sequitur, which is defined as "a conclusion or inference that does not follow from the premises" or evidence upon which it is based. WEBSTER'S NEW WORLD DICTIONARY 924 (3d College ed. 1988). If the market fails to do something that someone thinks it should do, it is called a market failure. The conclusion often drawn is that government needs to intervene in such cases. But it does not follow that government *must* intervene because government intervention may be worse than doing nothing at all. For examples of government failure in the area of the environment, see THE YELLOWSTONE PRIMER: LAND AND RESOURCE MANAGEMENT IN THE GREATER YELLOWSTONE ECOSYSTEM (John A. Baden & Donald Leal eds., 1990). In some cases, there is evidence to suggest that government involvement has been harmful rather than beneficial. *See* Alston Chase, *Sometimes What Threatens Our Parks Is the Park Service*, WALL ST. J., Apr. 8, 1986, at 30 (government management policy resulted in wildlife disasters); Timothy Egan, *Forest Service Abusing Role, Dissidents Say*, N.Y. TIMES, Mar. 4, 1990, at L1, col. 5 (Forest Service is the major cause of deforestation); U.S. GENERAL ACCOUNTING OFFICE, RANGELAND MANAGEMENT: FOREST SERVICE NOT PERFORMING NEEDED MONITORING OF GRAZING ALLOTMENTS, GAO/RCED-91-148, May 1991 (Forest Service responsible for overgrazing); U.S. GENERAL ACCOUNTING OFFICE, RANGELAND MANAGEMENT: CURRENT FORMULA KEEPS GRAZING FEES LOW, GAO/RCED-91-185BR, June 1991 (abnormally low grazing fee policy leads to overgrazing). Not too many years ago, some environmentalists would blame pollution and environmental degradation on the capitalist countries in the West. But in the last few years, it has become apparent that the centrally planned economies of Central and Eastern Europe have been even bigger environmental offenders. *See, e.g.*, THOMAS DILORENZO, CENTER FOR THE STUDY OF AM. BUS., DOES CAPITALISM CAUSE POLLUTION? (1990); MURRAY FESHBACH & ALFRED FRIENDLY, JR., ECOCIDE IN THE USSR: HEALTH AND NATURE UNDER SIEGE (1992). In fact, it might be reasonable to conclude that the adoption of a market economic system (with property rights) could be beneficial to the environment, since countries with free enterprise tend to have less pollution than countries with centrally planned economies. For example, in Katowice, Poland, one of Eastern Europe's most polluted cities, pollutant emissions dropped about 50% since the introduction of a market economy. *See* Peter Furhman, *Breathing the Polish Air*, FORBES, June 24, 1991, at 40. Could it be that environmental quality and economic growth are mutually dependent rather than mutually exclusive?

19. PROJECT 88: HARNESSING MARKET FORCES TO PROTECT OUR ENVIRONMENT: INITIATIVES FOR THE NEW PRESIDENT (1988) (a public policy study sponsored by Senator Timothy E. Wirth and Senator John Heinz). The second volume was published as PROJECT 88—ROUND II: INCENTIVES FOR ACTION: DESIGNING MARKET-BASED ENVIRONMENTAL STRATEGIES (1991).

mention the hundreds of "toxics" that are regulated one way or another. Also, at present there are no proposals to allow cross-trading of different sorts of pollution permits, and there will be great restrictions on the marketability of rights of the same sort by geography.[20] Thus, great rigidities would be introduced into the process. For example, we could not take advantage of a drop in the seriousness of acid rain because the political process moves too slowly. The result is an imposition of an increasing series of side constraints on an economy with the potential of enormous cross-trade benefits (such as more NO_x and less ozone) but no ability to take advantage of these benefits.[21] Such governmental failures are endemic to the system.

To state this criticism in Coasian terms, the problem is that markets have more to do with the terms of trade and the opportunity of creating new linkages and new tradeoffs than with the production of a rigid bundle of nontradeable goods. Coase's "problem of social cost"[22] is relevant to this entire debate but has yet to be understood by the market socialist school and environmentalists.

Yet, perhaps the major fault with trading permits is that, while they allow market forces to allocate resources, they entail a fundamental and pervasive violation of property rights. In reality, MPPs are licenses to pollute, licenses that can violate property rights. Thus, trading permits are a form of market socialism because they allow market forces to operate yet ignore property rights. Martin Anderson expresses the following view:

> Fortunately, there is a simple, effective approach available—long appreciated but underused. An approach based solidly on . . . private property rights.
>
> At its root all pollution is garbage disposal in one form or another. The essence of the problem is that our laws and the administration of justice have not kept up with the refuse produced by the exploding growth of industry, technology and science.
>
> If you took a bag of garbage and dropped it on your neighbor's lawn, we all know what would happen. Your neighbor would call the police and you would soon find out that the disposal of your garbage is your responsibility, and that it must be done in a way that does not violate anyone else's property rights.
>
> But if you took that same bag of garbage and burned it in a backyard incinerator, letting the sooty ash drift over the neighborhood,

20. This is because the impact a specific pollutant has varies by region.

21. Another problem with permit trading is that it might cause pollution to become concentrated in certain areas and result in abnormally high levels of pollution if the firms in a particular area purchase excessive permits. For a discussion of the remedies such victims might be able to receive and how they might recover, see Note, *A Remedy for the Victims of Pollution Permit Markets*, 92 YALE L.J. 1022 (1983).

22. Ronald H. Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960), *reprinted in* RONALD H. COASE, THE FIRM, THE MARKET AND THE LAW 95 (1988). There is a strong case to suggest that there is no such thing as "social cost." *See* STEVEN N. S. CHEUNG, THE MYTH OF SOCIAL COST (1978).

> the problem gets more complicated. The violation of property rights is clear, but protecting them is more difficult. And when the garbage is invisible to the naked eye, as much air and water pollution is, the problem often seems insurmountable.
>
> We have tried many remedies in the past. We have tried to dissuade polluters with fines, with government programs whereby all pay to clean up the garbage produced by the few, with a myriad of detailed regulations to control the degree of pollution. Now some even seriously propose that we should have economic incentives, to charge polluters a fee for polluting—and the more they pollute the more they pay. But that is just like taxing burglars as an economic incentive to deter people from stealing your property, and just as unconscionable.
>
> The only effective way to eliminate serious pollution is to treat it exactly for what it is—garbage. Just as one does not have the right to drop a bag of garbage on his neighbor's lawn, so does one not have the right to place any garbage in the air or the water or the earth, if it in any way violates the property rights of others.
>
> What we need are tougher clearer environmental laws that are enforced—not with economic incentives but with jail terms.
>
> What the strict application of the idea of private property rights will do is to increase the cost of garbage disposal. That increased cost will be reflected in a higher cost for the products and services that resulted from the process that produced the garbage. And that is how it should be. Much of the cost of disposing of waste is already incorporated in the price of the goods and services produced. All of it should be. Then only those who benefit from the garbage made will pay for its disposal.[23]

A true market system would include both components—a price system and recognition of property rights. Thus, TERs alone are an incomplete solution. There is, however, a true market solution that depends on the price system without violating property rights. The first step is to establish a system of clearly defined and enforceable property rights.[24] Once clearly defined, market forces will take over and determine the optimal level of pollution. If a firm creates pollution without first entering into an agreement, or if the parties cannot

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23. Martin Anderson, *George Bush Environmentalist*, THE CHRISTIAN SCIENCE MONITOR, Jan. 4, 1989, at 19, *cited in* Walter Block, *Preface to* ECONOMICS AND THE ENVIRONMENT: A RECONCILIATION at ix-x (Walter Block ed., 1990).

24. Nuisance, trespass, negligence and strict liability are all possible approaches to achieve a just result, depending on the facts and circumstances in each case. However, the key to any recovery is a clearly-defined system of property rights. Julian Conrad Juergensmeyer discusses these four avenues of recovery in *Control of Air Pollution Through the Assertion of Private Rights*, 1967 DUKE L.J. 1126 (1967). Richard Epstein develops a substantive law of nuisance based on the assumption that cases should be decided solely with reference to the principles of corrective justice: "rendering to each person whatever redress is required because of the violation of his rights by another." Richard A. Epstein, *Nuisance Law: Corrective Justice and Its Utilitarian Constraints*, 8 J. LEGAL STUD. 49, 50 (1979).

come to an agreement fixing the cost and degree of pollution, then the court system could be used to assess damages. Such a system provides an incentive for companies to reduce the amount of discharge or bear the full cost of their actions.[25]

This system was prevalent in the United States until the nineteenth century.[26] Then, in a series of nuisance cases, individual property rights were denied when the courts sided with the violators of those rights.[27] For example, in *Ryan v. New York Central Railroad Co.*,[28]

25. Some economists point out that another method by which offenders would be forced to pay the full cost of their actions would be to impose a tax. *See* WILFRED BECKERMAN, PRICING FOR POLLUTION: MARKET PRICING, GOVERNMENT REGULATION, ENVIRONMENTAL POLICY (1990). But this solution suffers from several defects, the most important one being that taxation does not compensate the victims. While taxes can alter behavior, any funds that are raised go to the government, not the victims. Moreover, taxing the perpetrators does not necessarily reduce the amount of effluents; it merely raises the cost, while permitting them to continue to violate the property rights of the victims. For economic critiques that point out the advantages of imposing taxes on polluters, see A.V. KNEESE & C.L. SCHULTZE, POLLUTION, PRICES, AND PUBLIC POLICY (1975). For a treatise that is critical of using taxes to regulate pollution, see Dwight R. Lee, *Rent-Seeking and Its Implications for Pollution Taxation*, 51 S. ECON. J. 731 (1985), *reprinted in* THE POLITICAL ECONOMY OF RENT-SEEKING 353 (Charles K. Rowley et al. eds., 1988).

Using taxes to regulate pollution also suffers from a theoretical flaw. Since all costs are private and therefore subjective, there is no way to aggregate costs of different individuals to arrive at some optimal social cost or to determine an appropriate tax. LUDWIG VON MISES, EPISTEMOLOGICAL PROBLEMS OF ECONOMICS 165 (George Reisman trans., 1976). Although it makes no sense to speak about externalities that generate a divergence between private and social costs, that is the argument economists often make for imposing an excise tax on energy. While negative externalities should concern policymakers, it is not because they cause private and social costs to diverge, but because they impose private costs on nonconsenting parties. Thus, there is no way to arrive at Pareto optimality. Even if there were, it would be possible only for an instant because conditions and knowledge change over time, rendering even a temporarily optimal tax inefficient. Roy E. Cordato discusses these weaknesses inherent in energy taxes in *Subjective Value, Time Passage, and the Economics of Harmful Effects*, 12 HAMLINE L. REV. 229 (1989); *see also Excises, Social Costs, and the Myth of Efficient Taxation: The Case of Carbon Taxes*, IRET POLICY BULLETIN NO. 56, July 3, 1992; *see also* ROY CORDATO, WELFARE ECONOMICS AND EXTERNALITIES IN AN OPEN ENDED UNIVERSE: A MODERN AUSTRIAN PERSPECTIVE (1992).

26. For a detailed account of this system, see MORTON J. HORWITZ, THE TRANSFORMATION OF AMERICAN LAW, 1780-1860 (1977).

27. For a discussion of how court holdings in nuisance cases led to a disparagement of property rights, see Murray N. Rothbard, *Law, Property Rights, and Air Pollution*, 2 CATO J. 55 (1982), *reprinted in* ECONOMICS AND THE ENVIRONMENT: A RECONCILIATION 233 (Walter Block ed., 1990). For applications of private nuisance law to air pollution, see William C. Porter, *The Role of Private Nuisance Law in the Control of Air Pollution*, 10 ARIZ. L. REV. 107 (1968); *see also* Julian C. Juergenmeyer, *Control of Air Pollution Through the Assertion of Private Rights*, 1967 DUKE L.J. 1126 (1967).

BLACK'S LAW DICTIONARY 1066 (6th ed. 1990) splits nuisances into two main categories, nuisance in fact and nuisance per se. It defines nuisance in fact as "[a]cts, occupations or structures which are not nuisances per se but may become nuisances by reason of the circumstances of the location and surroundings . . . ." *Id.* (citations omitted). BLACK'S defines nuisance per se as "[a]n act, occupation, or structure which is a nuisance at all times and under all circumstances, regardless of location or sur-

sparks from a locomotive caused a house to burn down. The court held that the railroad was not liable for the damages, regardless of the causation, because "[i]n a commercial country, each man, to some extent, runs the hazard of his neighbor's conduct, and each, by insurance against such hazards, is enabled to obtain a reasonable security against loss."[29] Although the railroad was the obvious cause of the damage, it was not made to bear the financial cost incurred as a result of its actions.[30]

Undoubtedly, the policy rationale was that it is better that a few farmers go uncompensated than that trains stop running or be forced to pay the full cost of their operation.[31] This position, of course, re-

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roundings" *Id.* (citations omitted) and "as, things prejudicial to public morals or dangerous to life or injurious to public rights; distinguished from things declared to be nuisances by statute, and also from things which constitute nuisances only when considered with reference to their particular location or other individual circumstances." *Id.* (citations omitted).

28. 35 N.Y. 210 (1866).

29. *Id.* at 217.

30. Sometimes, judges look to the social value of the activity or offender when making their determination as to liability. Factories, smelters, oil refineries, noisy machinery, airports, and blasting have social utility, whereas foul ponds and vicious or noisy dogs do not. Of course, this view ignores individual rights and fundamental fairness. Nevertheless, this is the approach courts often take. For cases on these points, *see, e.g.*, Monroe Carp Pond Co. v. River Raisin Paper Co., 215 N.W. 325 (Mich. 1927) (factory); Daughtry v. Warren, 85 N.C. 136 (1881) (factory); Clifton Iron Co. v. Dye, 6 So. 192 (Ala. 1889) (smelter); Madison v. Ducktown Sulphur, Copper & Iron Co., 83 S.W. 658 (Tenn. 1904) (smelter); Helms v. Eastern Kansas Oil Co., 169 P. 208 (Kan. 1917) (oil refinery); Rose v. Socony-Vacuum Corp., 173 A. 627 (R.I. 1934) (oil refinery); Gilbert v. Showerman, 23 Mich. 448 (1871) (noisy machinery); Antonik v. Chamberlain, 78 N.E.2d 752 (Ohio Ct. App. 1947) (airports); Booth v. Rome, W. & O.T.R. Co., 35 N.E. 592 (N.Y. 1893) (blasting); Hosmer v. Republic Iron & Steel Co., 60 So. 801 (Ala. 1913) (foul pond); Hubbard v. Preston, 51 N.W. 209 (Mich. 1892) (dog).

The whole concept of "public policy" suffers from major structural weaknesses because it is based on utilitarianism—the greatest good for the greatest number. Since there is no way to measure utility, it is not possible to determine whether a particular public policy should be using a utilitarian approach, even if the goal is to adopt a policy that maximizes societal benefits. Thus, the legal system and policymakers are forced to rely on majoritarianism without regard to individual rights. Courts have ruled that a few farmers must have their property rights violated so that railroads can continue to spew sparks on their land because of some overall benefit to society. Courts have adopted this "balancing" concept to arrive at decisions in a number of areas. But once it is seen that the balancing argument is just another positive rights argument, the argument falls apart. For more on this point, see Ronald A. Cass, *The Perils of Positive Thinking: Constitutional Interpretation and Negative First Amendment Theory*, 34 U.C.L.A. L. REV. 1405 (1987); Robert W. McGee, *The Right To Not Associate: The Case for an Absolute Freedom of Negative Association*, 23 U. WEST L.A. L. REV. 123, 136-42 (1992).

31. Ronald Coase presents a detailed discussion of farmers and locomotive sparks in his classic article, Coase, *The Problem of Social Cost*, *supra* note 22. However, he takes a cost-benefit position rather than one based on rights. His view is that the railroad should compensate the farmer for his loss in some cases but not in others, depending on the relative costs and benefits. This position suffers from a number of flaws. For one thing, it is impossible to measure costs and benefits because all such

sulted in a basic violation of property rights, because farmers were suffering financial damage but were not compensated. It was a classic example of what public choice economists call "rent seeking,"[32] since some groups (farmers in this case) were forced to pay for the benefits of other groups (railroad owners). If courts had held in favor of the farmers instead, railroad owners would have been forced to find a way to reduce the amount of sparks their trains emitted or pay the full cost of their activity. In effect, then, farmers were being forced by the legal system to subsidize railroads.

Obviously, there must be some de minimis exception. Victims should not be able to sue for a slight invasion of their property, as when a single particle of pollutant, undetectable without expensive scientific instruments, crosses the victim's property line, or where an airplane passes over an individual's property at a height of 35,000 feet. This is a well-established legal principle, both in England and the United States.[33] This principle, sometimes

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values are subjective. Philosophically, his position is utilitarian, which means that the "common good" comes before rights. But, as deontological moral theory stresses, rights come before the common good. Also, there is no way to determine what the common good is in a pluralist society where individuals have different goals. Michael Novak discusses this point in FREE PERSONS AND THE COMMON GOOD (1989). Kantians would be quick to point out that to hold the individual good to be subservient to the common good is immoral because individuals would then be means rather than ends. Richard N. Langlois makes some of these points in *Cost-Benefit Analysis, Environmentalism, and Rights*, 2 CATO J. 279 (1982). *See also* Walter Block, *Coase and Demsetz on Private Property Rights*, 1 J. LIBERTARIAN STUD. 111 (1977).

32. "Rent-seeking" might be defined as seeking special privileges or protection from government or getting others to pay for your benefits. For example, cable television companies are rent-seekers when they attempt to obtain a government-protected monopoly. Chrysler is a rent-seeker when it asks Congress to pass legislation that prevents Japanese autos from entering the United States. Railroads are rent-seekers when they ask government to absolve them of liability for the damage their locomotives' sparks have done to farmer's property. For detailed analyses of rent-seeking, see TOWARDS A THEORY OF A RENT-SEEKING SOCIETY (James M. Buchanan et al. eds., 1980); THE POLITICAL ECONOMY OF RENT-SEEKING, *supra* note 25. However, there are problems with using the phrase rent-seeking to indicate what is in effect theft. First, it impugns the ancient and honorable practice of paying and collecting rent. The landlord has been under enough unjustified attack; we do not need to add to it further. Second, rent-seeking has an alternative meaning, the attempt to gain as much of the consumers' or producers' surpluses as possible from commercial activity. What is wrong with that? This is the way of the marketplace and it is a mutually beneficial enterprise. However, when the government is involved, it becomes an attempt to seize resources from others against their will. This is essentially theft. It has nothing to do with rent in either the economic or legal commercial sense. For further information on this, see FREEDOM, DEMOCRACY AND ECONOMIC WELFARE: PROCEEDINGS OF AN INTERNATIONAL SYMPOSIUM 207 (Michael A. Walker ed., 1988).

33. Courts have traditionally refused to recognize minor invasions as nuisances where the harm is slight and the conduct is reasonable. Jones v. Hayden, 37 N.E.2d 243 (Mass. 1941) (where a sidewalk is obstructed by a bale of hay); Graves v. Shattuck, 35 N.H. 257 (1857) (where a highway is obstructed by moving a house); People v. Transit Dev. Co., 115 N.Y.S. 297 (1909) (where there is smoke from an electric power plant); Commonwealth v. Miller, 21 A. 138 (Pa. 1891) (where there was a petroleum refinery and the nuisance was a matter of locality); Phillips v. State, 66 Tenn.

called the "live and let live" rule, was elaborated on in *Bamford v. Turnley*:[34]

> The instances put during the argument, of burning weeds, emptying cess-pools, making noises during repairs, and other instances which would be nuisances if done wantonly or maliciously, nevertheless may be lawfully done. It cannot be said that such acts are not nuisances, because of the hypothesis they are; and it cannot be doubted that if a person maliciously and without cause made close to a dwelling house the same offensive smells as may be made in emptying a cess-pool, an action would lie. Nor can these cases be got rid of as extreme cases, because such cases are properly used for testing a principle. Nor can it be said that the jury settle such questions by finding there is no nuisance, though there is . . . . There must be, then, some principle on which such cases must be excepted. It seems to me that principle may be deduced from the character of these cases, and is this, viz., that those acts necessary for the common and ordinary use and occupation of land and houses may be done, if conveniently done, without submitting those who do them to an action . . . . It is as much for the advantage of one owner as of another; for the very nuisance the one complains of, as the result of the ordinary use of his neighbour's land, he himself will create in the ordinary use of his own, and the reciprocal nuisances are of a comparatively trifling character. The convenience of such a rule may be indicated by calling it a rule of give and take, live and let live . . . .[35]

Where the nuisance is slight,[36] courts and legislatures might absolve the perpetrator of liability, especially where no damage can be proven. However, where the nuisance is more than slight, or where there is measurable or detectable damage, courts should recognize liability and define the method by which the perpetrator is to be penalized. It is critical that the legal system clearly define property rights and how violations of property rights are to be dealt with. These decisions should not be based on utilitarian or public policy considera-

151 (1874) (where there was a slaughterhouse near a highway). But the major questions to be answered are: when is the harm "slight," and when is the conduct "reasonable"? To comply with the principle of corrective justice, these answers must be based on individual rights, not on utilitarian or public policy grounds. The balancing of interests doctrine has no place here. *See also* Murray N. Rothbard, *Law, Property Rights, and Air Pollution*, 2 CATO J. 55 (1982), *reprinted in* ECONOMICS AND THE ENVIRONMENT: A RECONCILIATION 233 (Walter Block ed., 1990).

34. 122 Eng. Rep. 27 (Ex. Ch. 1862).

35. *Id.* at 32-33. Richard Epstein also cites this quote in *Nuisance Law: Corrective Justice and Its Utilitarian Constraints*, *supra* note 24, at 82-83.

36. In some cases, although the conduct of each of several perpetrators, individually, may be within the de minimis exception, the collective conduct may result in an unreasonable interference and the courts have held that all perpetrators are liable. *See, e.g.*, Woodyear v. Schaefer, 57 Md. 1 (1881) (pollution); Woodland v. Portneuf Marsh Valley Irrigation Co., 146 P. 1106 (Idaho 1915) (flooding); Sloggy v. Dilworth, 36 N.W. 451 (Minn. 1888) (flooding); Harley v. Merrill Brick Co., 48 N.W. 1000 (Iowa 1891) (smoke).

tions, because private property rights would be disparaged and the doors left wide open for rent-seeking by powerful special-interest groups.

Epstein suggests that allowing private causes of action might be counterproductive where the following four factors are present:

1. High administrative costs for claim resolution.
2. High transaction costs for voluntary reassignment of rights.
3. Low value to the interested parties of the ownership rights whose rearrangement is mandated by public rule.
4. Presence of implicit in-kind compensation from all to all that precludes any systematic redistribution of wealth among the interested parties.[37]

Upon examination, one sees that pollution may be regulated by the use of selected aspects of nuisance law. If the emissions are caused by one individual and the trespass is committed against one individual, the solution is simple.[38] In such instances, the perpetrator and the victim can be clearly identified and can negotiate a trade. The polluter can pay the victim some mutually agreed upon price. If, however, the parties do not agree, the pollution will not be permitted. But what about the many situations in which there is no easy solution?[39]

A great deal of pollution is the result of the "tragedy of the commons."[40] In areas of common usage, such as lakes, streams, and air, there is no private ownership right. Clearly, transferring these com-

37. Epstein, *supra* note 24, at 79.

38. Such nuisances are called private nuisances, as opposed to public nuisances. It should be pointed out that the solution is simple only if property rights are recognized and respected. In *Ryan*, property rights were ignored. 35 N.Y. 210 (1866). While the *Ryan* solution also provided a simple solution, it was also unjust. Justice is to be preferred over simplicity.

39. Individual victims often do not have legal standing to sue for a public nuisance unless they have incurred some particular damage. National Audubon Soc'y v. Johnson, 317 F. Supp. 1330 (S.D. Tex. 1970). However, some state laws allow individuals to sue in such cases when there is a "public interest." But in the absence of statutes, individuals who have had their property rights violated often have no recourse if the nuisance is deemed to be public rather than private. Additionally, courts have held that victims may resort to self-help to abate a public nuisance only if they suffer some special damage that other members of the public do not. Nation v. District of Columbia, 34 App. D.C. 453 (1910); Brown v. Perkins, 78 Mass. (11 Gray) 89, 101 (1858); Corthell v. Holmes, 32 A. 715 (Me. 1894). One way to strengthen property rights is to expand the possibility of individual and citizen suits in cases in which an individual can prove damage, without regard to whether the nuisance is public or private. For a discussion of this topic, see Michael S. Greve, *The Private Enforcement of Environmental Law*, 65 TUL. L. REV. 339 (1990).

40. For more on this point, see Garrett Hardin, *The Tragedy of the Commons*, 162 SCI. 1243 (1968); Robert J. Smith, *Resolving the Tragedy of the Commons by Creating Private Property Rights in Wildlife*, 1 CATO J. 439 (1981). Hardin was not the first one to recognize the tragedy of the commons. Aristotle recognized that property held privately was taken better care of than that owned communally. *See generally* ARISTOTLE, THE POLITICS, Bk. II, Ch. 5 (Carnes Lord trans., 1984).

monly owned properties to private ownership[41] could go a long way toward resolving externality problems, since privately owned property tends to be far less subject to ecologically destructive exploitation. While it may not be politically feasible to privatize the Pacific Ocean in the near future,[42] it is certainly possible to privatize smaller bodies of water. Government-owned lakes could be sold to the highest bidder, or could be given to the natural homesteaders, whose land creates the shoreline. In cases of multiple ownership of the lake, the owners could form a cooperative or corporation to determine how the lake should be used, for boating, fishing, recreation, etc. The owners could charge a fee for the use of their lake. If someone was interested in dumping waste on the property, the owners would be in a position to regulate the terms of the agreement, determining the amount of permissible waste and the cost of the dumping. Conversely, if an environmental group sought to completely prohibit dumping, the group could negotiate an agreement with the owners, compensating the lost income and obtaining a promise to prevent the dumping activity. Alternatively, the group could purchase the lake itself. In the case of streams, similar arrangements could be made.

Property rights in water have evolved over many years, and are most highly developed in the western United States, where water is scarce.[43] Much of the property law that has evolved in that area could be adapted to a private property regime regulating pollution.[44] Unfortunately, in the case of water allocation in the western United States, state intervention has prevented the market from functioning effectively. All too often, the government decides how water rights

41. For some examples that illustrate the beneficial effect of privatizing water on the environment (and on economic growth), see Terry L. Anderson, *The Market Process and Environmental Amenities*, *in* ECONOMICS AND THE ENVIRONMENT: A RECONCILIATION 137 (Walter E. Block ed., 1990); Walter Block, *Institutions, Property Rights and Externalities: The Case of Water Quality*, *in* AGRICULTURE AND WATER QUALITY: PROCEEDINGS OF AN INTERDISCIPLINARY SYMPOSIUM 191 (Guelph, Ontario, Centre for Soil and Water Conservation, 1992).

42. Anderson and Leal discuss some of the possibilities and methods by which oceans may be privatized. *See* ANDERSON & LEAL, *supra* note 16, at 121. With modern technology, it may be possible to define property rights in oceans electronically and by the use of lasers and sonar. *See also* Walter E. Block, *Environmental Problems, Private Property Rights Solutions*, *in* ECONOMICS AND THE ENVIRONMENT: A RECONCILIATION 281 (Walter Block ed., 1990); Block, *supra* note 41, at 191.

43. The development of water law in the West has by no means always resulted in the strengthening of property rights. Indeed, in many cases, courts and legislatures have prevented individuals from exercising property rights over water, thereby making it impossible for markets to develop. Terry Anderson makes this point in *The Market Process and Environmental Amenities*, *supra* note 41, at 141-44.

44. For source material on property rights in water, see TERRY L. ANDERSON, WATER CRISIS: ENDING THE POLICY DROUGHT (1983); WATER RIGHTS (Terry L. Anderson ed., 1983); Terry L. Anderson & Donald R. Leal, *Going with the Flow: Marketing Instream Flows and Groundwater*, 13 COLUM. J. ENVTL. L. 317 (1988).

should be allocated on the basis of interest group pressure, rather than sound economics.[45]

Additionally, a similar system of property rights could evolve in the area of auto emissions. Currently, nearly all roads and highways are owned by the government, which once again creates a "commons" problem. Yet, government ownership is by no means necessary. Highways and roads could be turned over to private parties,[46] who might then establish rules for the use of their roads. Motor vehicles emitting excessive pollution could lead neighboring households to sue the owner of the road for nuisance. It is far easier to sue one of a limited number of road owners than one of the virtually infinite number of drivers. Therefore, private ownership could provide a stronger incentive for the owners to regulate the amount of emissions permitted on their property. Vehicles that pollute too much would simply not be allowed to use the road or would be required to pay for their pollution.

Moreover, the introduction of property rights has proven to be beneficial to conservation in a number of other cases. For instance, there is concern among some environmentalists and others that elephants will become extinct if something is not done to prevent their slaughter. The solution has been to ban the ivory trade.[47] However, such a solution is ineffective because it does not make economic sense. If ivory is banned, it will become more scarce, making trade in ivory more lucrative. As a result, prohibiting the ivory trade will tend to actually increase rather than decrease incentives. The fact that such trade is illegal will attract individuals who have few scruples. If elephants were privatized, that is, owned by individuals and private corporations, the danger of their becoming extinct would be vastly

45. For more on this point, see ANDERSON & LEAL, *supra* note 16, at 99.

46. For more on this point, see RANDALL FITZGERALD, WHEN GOVERNMENT GOES PRIVATE: SUCCESSFUL ALTERNATIVES TO PUBLIC SERVICES 163 (1988). Privately owned roads tend to be in better condition than government roads, and can be maintained at much lower cost. Laredo, Texas sold about 150 city blocks to private owners, with beneficial effects. A group of 113 corporations, developers, and businesses in Houston and Harris County, Texas have financed and built a large portion of the area's road network. A number of other communities have privatized roads and highways, which formerly were thought to represent a classic example of a public good. But now, that classification has been drawn into question. If roads and highways can no longer be automatically classified as public goods, is it possible that classifying all lakes and streams (and oceans) as public goods might also be incorrect? Block, *supra* note 41. For more on the privatization of roads, see Walter Block, *Public Goods and Externalities: The Case of Roads*, 7 J. LIBERTARIAN STUD. 1 (1983); Walter Block, *Free Market Transportation: Denationalizing the Roads*, 3 J. LIBERTARIAN STUD. 209 (1979); Walter Block, *Congestion and Road Pricing*, 4 J. LIBERTARIAN STUD. 299 (1980); Walter Block, *Theories of Highway Safety*, 912 TRANSP. RES. REC. 7 (1983); MURRAY N. ROTHBARD, FOR A NEW LIBERTY 208 (1978); WILLIAM C. WOOLRIDGE, UNCLE SAM THE MONOPOLY MAN (1970).

47. Fred L. Smith, Jr., *Free-market eco-management: An alternative to ecological central planning*, CHEMTECH, Oct. 1991, at 598.

reduced. One should note that such a solution is not mere utopian polemics. There is empirical evidence to support it. In Kenya and other East and Central African countries, for example, governments resorted to a common property management strategy in which elephants were owned by no one. As a result, the elephant population in that part of the world has declined by more than fifty percent in the last decade.[48] Conversely, in Zimbabwe the elephants are privately owned by regional tribal councils, who take an ownership interest. As a result of their protection, the elephant population has actually increased.

A comparison might also be made between cattle and bison. In the "Wild West" period of U.S. history, bison were owned by no one and thus, not surprisingly, were hunted down and killed indiscriminately, to the very brink of extinction. They were not protected because they had no owners. In contrast, cattle were privately owned by ranchers. As Americans became more wealthy, they started to eat more meat which, coupled with advances in technology and transportation, greatly increased the demand for beef. Since cattle were always privately owned, their owners took an ownership interest by branding, fencing their herds, guarding them, and shooting rustlers. The law was on their side because it was illegal to steal cattle. Government supported cattle owners in exercising their property rights, thereby avoiding the "commons problem" that endangered bison. Could it be that there is some relationship between private property rights and the danger of species extinction? Why is it that privately owned animals such as chickens, dogs, cats and cattle are not in danger of extinction, but wild animals like whales and bald eagles are? It is clear that the solution to saving animals from extinction would be to privatize them.

While such a solution might be relatively easy to implement for some species, such as bison, the privatization solution might be more difficult for others like whales, dolphins, tuna and other migratory sea animals.[49] However, private ownership of such species is not impossible. In the short run, portions of some bodies of water could be privatized so that only the owner would be permitted to harvest water-based animals in a certain well-defined location. Selling the continental shelves, rivers and lakes might be feasible in the short-term. If lakes can be sold to private parties, can the Mediterranean Sea be far behind? In the long run, as technology improves, it might be possible to fence off some larger areas, perhaps by laser or sonar technology, so that animals from one sector would not travel onto another. Once

48. *Id.* at 599. *See also* Randy T. Simmons & Urs P. Kreuter, *Herd Mentality: Barring Ivory Sales is No Way to Save the Elephant*, POL'Y REV., Fall 1989, at 46.

49. Private companies in Oregon have found a way to privatize salmon. When the companies release the salmon from their hatcheries into the ocean, they imprint them with a chemical odor that guides them back to the release site when they are ready to spawn. Anderson, *supra* note 41, at 147.

property rights are established, the market would tend to find solutions to such problems.[50] Yet, in the absence of property rights, there is no incentive to even attempt to find solutions because there is no payoff.

III. ADDITIONAL COMMENTS

Why is it that economists who usually favor pure or full free-markets opt instead for TERs when it comes to pollution?[51] In some cases, it is because they cannot visualize how a full private property rights, free-market regime could actually function. At the very least, this is an implication that emerges from reading works that do not even discuss such an alternative.

In other instances, the market is rejected after what can best be described as superficial coverage, almost an afterthought. There is, however, at least one case where the market is considered in full detail—and then rejected outright in an intensive and exhaustive analysis. This is true of Edwin Dolan's work, *Controlling Acid Rain*.[52]

Dolan begins by describing what he takes to be the operation of a private property system in its confrontation with acid rain. A true Coasian, he offers two scenarios, one in which "ownership of the pollution source [does] not convey the right to send clouds of noxious gases into the neighbouring forest"[53] and one in which it did convey such a right. One need not concern oneself with the second system of law, since despite the Coasian contention that, absent transaction costs and wealth effects, either alternative will imply the same allocation of resources, this latter scenario would be antithetical to a Lockean-oriented private property rights system.[54] For instance, if the pollution source homesteaded the factory, and the forest owner in a similar manner "mixed his labor" with the forest, the former would

50. For example, the market found an efficient way to make high quality, inexpensive barbed wire in the nineteenth century because of the increased demand for fencing. Markets have a way of solving problems because the price system acts as a signalling mechanism to draw attention to needs that are not being met.

51. This tendency, unfortunately, includes far more than environmental concerns. Economists associated in the public mind with laissez faire capitalism have championed a whole host of quasi, demi, semi, market-"based" programs instead of free markets. *See, e.g.*, MILTON FRIEDMAN, A PROGRAM FOR MONETARY STABILITY 91 (1960); FRIEDRICH A. HAYEK, DENATIONALIZATION OF MONEY: THE ARGUMENT REFINED (3d ed. 1990) (in favor of the "Ducat" based on a basket of precious metals, commodity resources and fiat currencies—instead of embracing the gold standard, the money chosen by the market in an era of competing currencies when people were free to make such choices); *See* MILTON FRIEDMAN, CAPITALISM AND FREEDOM 85 (1962); MILTON FRIEDMAN & ROSE FRIEDMAN, FREE TO CHOOSE 150-65, 175-78 (1979).

52. Edwin G. Dolan, *Controlling Acid Rain*, *in* ECONOMICS AND THE ENVIRONMENT: A RECONCILIATION 215-32 (Walter Block ed., 1990).

53. *Id.* at 216.

54. *See generally* JOHN LOCKE, TWO TREATISES OF GOVERNMENT (Peter Laslett ed., 1960).

never obtain the right to send airborne pollutants to the latter. In the words of Dolan:

> [T]he forester would begin by demanding that emissions cease. In response, the polluter might stop the offending activity or install control equipment that allowed production to continue without further emissions. Instead, the polluter might offer a payment to the forester in exchange for allowing continued emissions. If a payment less than the cost of abatement turned out to exceed the forester's evaluation of the damage, a deal would be struck along these lines. As still another alternative, the polluter might offer to buy the forest outright and decide what to do about future emissions on the basis of internal benefit-cost calculations.[55]

However, Dolan rejects this market model (not "market-based model," as he contends).[56] In the terminology we are employing, the demand that emissions cease is a pure or full free-market solution. In contrast, Dolan's own proposal, the TER, is characterized as being "market-based," or a "quasi-market" alternative.

Dolan gives four reasons for his rejection of the market. First, Dolan addresses scientific uncertainties:

- The causes of Mount Mitchell's dying trees, New York's and Canada's dead lakes, and Vermont's summer haze are not known with certainty.
- Even if air pollution is accepted as the culprit, no one area's pollution can be traced to a particular source.
- The property rights of the owners of pollution sources, the owners of damaged properties, and other parties indirectly affected are matters of dispute, and:
- Even if the first three points were resolved, the transactions costs of private negotiations between numerous source owners and numerous owners of damaged property would appear to be prohibitive.[57]

Let us consider these four objections in turn. In the first case, the uncertainty is due, our author informs us, to three factors. The first factor is that more than one pollutant, in combination, may have caused the problem, and therefore assessing the damage caused by each individual pollutant "becomes difficult."[58] However, this difficulty alone does not justify rejecting a private property system upon which western civilization may be said to be based. Certainly, our jurisprudence is set up to deal with the challenge of combined causes, and effectively does just that in a myriad of other contexts. For example, there is contribution among joint tort-feasors, where each defend-

55. Dolan, *supra* note 52, at 216.
56. *Id.*
57. *Id.*
58. *Id.* at 217.

ant is apportioned a part of the blame, and the penalty is based on this allocation.[59]

The second factor is that there are "non linearities and threshold effects."[60] It is worth quoting Dolan in full on this:

> One such non-linearity concerns the formation of acid rain. The rate of formation depends not only on the presence of precursors—the oxides of nitrogen and sulfur emitted by pollution sources—but also on the presence of oxidizing agents, which promote acid formation, and alkaline substances, which retard acid formation. Depending on the presence of oxidizing and alkaline agents, an increment of pollution might add greatly, slightly, or not at all to the acidity of precipitation. Another threshold effect involves the "buffering" properties of soils in areas where acid precipitation falls. Buffering compounds in the soil may for years prevent acid rain from doing environmental damage. At some point, however, cumulative acid deposition exhausts the buffering capacity and damage rapidly escalates.[61]

Alkaline substances and buffering compounds are not contributing factors because they reduce the effect of the noxious airborne chemical. Therefore, the profit-seeker can have no real complaint about them, they are an irrelevant complication. Oxidizing agents, however, are a completely different matter. Such agents exacerbate the harmful effects of the trespass, and in Dolan's view, it is improper for courts to blame the polluter, who in fact, created only some of the harm, while the rest of the damage was caused by the oxidizing agent.

Nevertheless, legal precedents already address this objection. To consider this, one can analogize the case of ordinary (human) trespass to the intrusion of pollutants onto the property of the victim. In a typical case, the thief breaks into the premises of the homeowner. Unbeknownst to the intruder, the victim has a weak heart and is easily frightened. In this example, the weak heart is analogous to the oxidizing agent, in that it amplifies the harm. As a result of the trespass, the homeowner dies from a heart attack. Can the trespasser be found liable for wrongful death? Yes, because of the doctrine of "you take your victim as you find him."[62]

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59. This does not imply agreement with the specifics of this aspect of jurisprudence on the part of the present authors, merely that multiple causation is no inseparable barrier to a full private property solution to the problem of acid rain.

60. Dolan, *supra* note 52, at 218.

61. *Id.*

62. The classic example of this doctrine is where a man with an "eggshell skull" died as the result of an injury that would have caused a mere bump on the head of a normal man. *See* Dulieu v. White & Sons, 2 K.B. 669 (1901). This legal principle is discussed in the "proximate cause" or "unforeseeable consequences" section of most tort texts. *See* WILLIAM L. PROSSER, LAW OF TORTS 262 (1971). *See also* McCahill v. New York Transp. Co., 94 N.E. 616 (N.Y. 1911) (where man struck by taxi dies the next day of delirium tremens, which was precipitated by the accident).

Applying this principle in the pollution context, the polluter should be forced to "take the atmosphere as the polluter finds it." If oxidizing agents worsen the harm of the emissions, the polluter should, in like manner, be held responsible for the entire damage, both the part created by his or her pollution, and that portion caused by the oxidizing agents in the air. Any number of factors may exacerbate the damage caused by the polluter. In another of Dolan's examples, moss may be the contributing factor. As Dolan explains:

> [A]cid rain does not kill trees directly. The mechanisms involved may be quite complicated. To give one example, Lee Klinger, working with the National Center for Atmospheric Research in Boulder, Colo., sees a link between forest diebacks and certain mosses that are nearly always present in dying forests. The mosses produce organic acids that mobilize aluminum naturally present in the soil, forming compounds toxic to the feeder roots of trees. Although the mosses are naturally present in most forests, their growth appears to be greatly promoted by acid precipitation.[63]

Dolan then considers the transportation problem:

> Even if the available evidence linking environmental damage to pollution is accepted, there remains the problem of tracing the acid rain at a given site to a particular source of pollution. To date, research on transportation models for pollution has been able to give only general, probabilistic answers. In general, pollution is known to travel from west to east, which is unfortunate in that the largest concentrations of emission sources are in the midwestern United States, and the most vulnerable environments along the eastern seaboard. Some pollution is thought to cross the U.S. - Canadian border, often from south to north, but in the cases of some emitters in Ontario, it travels from north to south. Pollution from sources in the east is often blown out to sea, where the resulting acid precipitation is thought to be relatively harmless.
>
> Incomplete knowledge of pollution transportation pathways is a significant complication in devising regulatory solutions to the acid rain problem. It is an even more serious barrier to implementing market-based pollution control efforts. Unless it is known where the pollution from a given source travels, there is no way to know who is entitled to enjoin whom, who should negotiate with whom, or who should compensate whom.
>
> It has been suggested that major pollution sources could be required to tag their emissions with distinctive combinations of isotope markers that could be read at downwind sites subject to acid precipitation. If technically feasible, that would certainly clarify some of the transportation issues. However, the problem would remain that shifting atmospheric currents would mix pollutants and deposit them in constantly changing and unpredictable patterns, so that a system of compensation founded on the transportation path-

63. Dolan, *supra* note 52, at 218.

> ways of a base period would not necessarily remain valid for subsequent periods.[64]

In this instance, the first problem is the inadequate treatment Dolan gives to the isotope solution. He overstates the importance of changing wind conditions that deposit pollutants in "constantly changing and unpredictable patterns." Criminals first rob people in neighborhood A, then in B, then in C in "constantly changing and unpredictable patterns." Does this mean that our society should not pursue criminals, wherever they operate?[65] Thus, Dolan's analysis implies a greater obstacle than is realistically presented.

Additionally, another difficulty is presented by the nearly complete failure of the development of the discipline of environmental forensics. Forensic medicine, in contrast, is a growing and healthy science. The forces of law and order are now able to trace perpetrators based on the tiniest bit of identifiable blood, semen, saliva or flesh, remaining on the bodies of their victims. Suppose however, that laws against murder had never been imposed. It is unlikely, in the extreme, that these capabilities would have been developed.

Something of this sort seems to have occurred in regard to airborne pollutants. Since the 1830s,[66] it has been legal for soot particles to trespass onto the property of other people; this is true for reasons compatible with, although by no means the same as, those offered by Dolan. Now reverse this situation, and suppose that the jurisprudence in effect until the 1830s (a period of strong property rights, where polluters were subject to fines, injunctions, and so forth) had continued to the present day. We would have long since been blessed with a robust and accomplished industry dedicated to environmental forensics. This discipline would have been fully capable of discharging the obligations that Dolan "regrets" we cannot do. In those earlier times, the chemical and atmospheric difficulties posed by Dolan would have been easier to deal with—matched by the lesser scientific capabilities of that epoch. The present challenges appear so daunting precisely because we are bereft of some 150 years of research and development that would have taken place had the law upheld the victims' property rights in that bygone era.

Dolan's third objection to the free enterprise system is perhaps his weakest. It consists solely of the claim that there are disputes as to the property rights of the polluters. The implication is that until these disputes are resolved we cannot go ahead and implement the law of trespass. While conceding that the common or natural law view is that people have a right "to exclude pollutants from their air space,"[67] he

64. *Id.* at 218-19.

65. It is likely that the winds are *more* predictable than the geographical doings of criminals.

66. *See* HORWITZ, *supra* note 26, at 53.

67. Dolan, *supra* note 52, at 219.

asserts that "counterclaims can be made that are difficult to dismiss out of hand."[68]

Obviously, there are difficulties with this view. Even if it were true, it by no means follows that the usual structures concerning private property rights could not be implemented with regard to acid rain. There are "disputes" about practically everything—but if we were to allow these disputes to deny the application of the law, we would be in a very sorry state indeed. In any event, it simply does not follow that Dolan's "common-law, weakened-by-disputations" theory would be inferior to the TER scheme.

Fortunately, we need not press on to a cost-benefit analysis of these two alternatives. It is reasonably easy to dismiss out of hand all of the arguments created, manufactured, or discovered by Dolan. Let us now consider them:

> [M]idwestern utilities are joined by producers of Appalachian high-sulfur coal. The coal interests point out that they have made long-lived investments and entered into long-term contracts to supply fuel to utilities. These contracts met all environmental regulations in force at the time they were entered into. To change the rules of the game now would impose job and revenue losses that should not go uncompensated.[69]

Clearly, it is easy to dismiss this argument, since its echoes the logic of a comparable argument that might have been made by Confederate slave owners after they lost the Civil War. Conceivably, plantation owners could have asserted a claim that because the initial purchase of slaves was legal, they had a vested right in slave ownership. Similarly, Dolan's argument on behalf of the midwestern utilities,[70] that point sources causing pollution are permissible simply because they were built "in accordance with all federal and state . . . standards in force at the time [that these events occurred]"[71] is unpersuasive. Slavery, although legal at one time, did not warrant an extension of slave owner "rights" any more than utilities hold "first in time" rights.

Put in this context, it is easy to see the fallacy of the argument. Utilities, like slave owners, were given "rights" which clearly did not belong to them as a matter of natural law.[72] It is gross legal positivism of the worst sort to insist, as does Dolan, that because a legislature saw fit to enact certain rules, that they have any proper force.

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68. *Id.*
69. *Id.* at 219-20.
70. *Id.* at 219.
71. *Id.*
72. We are implicitly assuming that when these polluters began their operations, they invaded the private property rights of other people. However, there may be some cases where the utility companies were located in an area first. If so, then according to the Lockean homesteading doctrine we espouse, the polluters have legitimate warrant to continue. The newcomers must take the air conditions as they found them.

The second part of this argument, the complaints made by the producers of Appalachian high sulfur coal, may also be dismissed by an analysis similar to claims that could have been made by those engaged in the business of supporting the slave trade. Rather than being compensated, the slave owners and those in dependent industries should have been subjected to the severest penalties of the law. Similarly, claims for compensation by the midwestern utilities and Appalachian coal are an outrage, and should be "dismissed out of hand." The real issue is whether, and to what extent, they should be penalized.

Finally, Dolan discusses transaction cost considerations:

> Consider a simple example. Suppose I am looking for a piece of land on which to build a drag strip. In doing so, I must face the possibility that although some people would consider a neighbourhood drag strip an amenity, others are likely to consider it a nuisance. Fortunately, there are many possible sites for the strip. Some will be large enough that noise from the strip will not carry beyond the property line, although, of course, it will be costly to buy so much acreage. Alternatively, there will be smaller, less expensive sites where I can first negotiate an option to buy, and then negotiate with the neighbours regarding compensation for the noise. Through a process of competitive bargaining in which I simultaneously negotiate with owners of various drag-strip sites and with the neighbours of those sites, I finally settle on the alternative that is least costly to me. Because all externalities have been internalized through the competitive bargaining process, that will also be the most efficient solution from the point of view of the community as a whole.
>
> Regrettably, quite aside from the scientific and legal uncertainties, the drag-strip model is not workable in the case of acid rain. Two features of the acid rain case enormously raise the transaction costs of a privately negotiated agreement. One is the fact that the number of parties involved is far greater—dozens of electric utilities, thousands of smaller industrial pollution sources, and millions of downwind property owners. The other is the fact that the pollution sources that cause the greatest concern are already in place, as are their sources of fuel supply, their customers, and their work forces. Thus, in place of the ex-ante competitive bargaining of the drag-strip model, the acid rain issue involves ex-post bargaining among parties who are already locked into inflexible relationships with one another by virtue of non-redeployable, site-specific investments. These circumstances encourage individual parties to play the free-rider if they are on the paying side or to hold out for a greater share of the potential gains from any agreement if they are on the receiving side. If free-riders, holdouts, and the sheer problem of numbers inflate transaction costs to the point where they exceed the potential gains from an agreement, nothing will be done.
>
> What is meant by "doing nothing" depends, it should be noted, on how property rights issues are resolved. If utilities' claims to free use of the airshed are upheld, then doing nothing means letting pollution continue unabated, even if the marginal gains from pollution

> abatement exceed the marginal costs of abatement. If the claims of downwind landowners are fully upheld against the polluters, then "doing nothing" means no pollution. Sources must either shut down or install equipment that will reduce pollution to an imperceptible level, even if at that opposite margin, marginal abatement costs exceed the marginal benefits of abatement. Neither extreme is optimal, viewed apart from transaction costs.[73]

Although, this is perhaps the strongest of his four arguments, it too is flawed. Initially, Dolan severely underestimates the ability of the market to internalize externalities, or, in his own terminology, to convert the acid rain situation into one approximating that of the "drag strip." Dolan unduly minimizes the effects of socialistic acts of government in other sectors of the economy in rendering problems in this part more intractable. A case in point is the large number of contracting parties, millions of automobile owners, who pollute the atmosphere. However, if government were to allow private ownership of streets, roads and highways,[74] the numbers would be reduced—at one fell swoop—from several million to perhaps several dozen.

The point is that under private ownership, no one would sue the individual automobile owner-drivers. Instead, responsibility would rest with the highway corporation, for running, as it were, a "pollution bawdy house." One of the reasons this legal scenario is dismissed out of hand is the impracticality of suing millions of people. However, privatization renders the objection less telling.

The common-law tradition that is the basis of this Article, would not interpret "doing nothing" as "letting pollution continue unabated." It would still fall short of a "no pollution" standard, the only other option offered by Dolan. More precisely, while natural law would not allow any pollution violating private property rights, it would allow any and all emissions that do not amount to a trespass.

How could emissions into the air be justified on this basis, given large numbers of transactors (although not as many as in Dolan's scenario), hold outs, free riders, and so forth? Dolan himself has detailed or suggested several options including: scrubbers, isotope marker emission tags, and cleaner burning fuels.

Furthermore, property rights themselves can come to the rescue, paradoxically, from the perspective of the "first in time" concept we rejected above. We rejected this argument earlier because the "rights" given out by the government to the utility polluters were illegitimate. They were established by arbitrary state edict. There is,

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73. Dolan, *supra* note 52, at 220-21.

74. *See* FITZGERALD, *supra* note 46, at 163. *See generally supra* note 46 and accompanying text.

however, a legitimate source of these rights: the Lockean homesteading principle.[75]

How would this work? Suppose, for instance, that a factory had been polluting an area of nine square miles, while claiming ownership over only a central core of one square mile. Subsequently, other people moved into the additional eight square miles after the factory emissions had commenced. Under these circumstances, the firm would own the property rights to its one square mile, but would also own the pollution rights to the other eight square miles. According to Dolan, this would not be due to legislative legerdemain. On the contrary, it would flow from the Lockean insight that he who first uses a previously non-owned resource obtains legitimate ownership rights over it. This is, after all, how the factory established its title over the one central square mile. Under these conditions, the amount of pollution that would ensue under a property rights standard would, contrary to Dolan's assertion, result in significant pollution.

Moreover, the "holdout" problem depicted by Dolan is unsatisfactory. Undoubtedly, the very terminology employed here implies that the holdout doesn't "really" value his homestead, peace and quiet, or clean air, let alone at the elevated level he says he does, that the individual is merely "holding out" for greater financial remuneration. Yet how can Dolan, or any other outside observer, know this? On the contrary, if preferences are subjective, one cannot treat the holdout any differently than the market participant with a reservation price for his or her property.

That being said, it is by no means impossible, as claimed by Dolan, to solve the problem of possibly strategic behavior. In order to comprehend this, one need only reflect upon the concept of options. A factory is attempting to locate in a place where there will be hundreds, if not thousands, of pollutees. It need not commit to that one area. Instead, it could purchase options to buy smoke emissions rights, at stipulated prices, at some half dozen places. Then, if holdouts are discovered in two or three of these areas, they can be played off one another.

There is still further difficulty with Dolan's position. He argues that transaction costs are unacceptably high. His proposed solution lies not in a market in property rights, but instead a "quasi-market" scheme of TERs. However, transaction costs, like all other costs, are amenable to being *reduced.* This reduction can only occur however, if, and only if, markets are allowed to function freely.

Historically, the initial costs of computers, televisions, and automobiles were exceedingly high. These products were initially priced out of reach of the middle class. In time, however, due to spe-

75. LOCKE, *supra* note 54; HOPPE, *supra* note 6, at 134; ROTHBARD, *supra* note 46.

cialization, division of labor, investment, and so forth, these costs were all markedly reduced. If transaction costs are ever to follow this pattern, property rights must not be permitted to ride roughshod over them, as in the MPP proposal.

This author's public policy recommendation, then, must be viewed as a recipe for the very market failure it decries. Without upholding the claims of downwind landowners against polluters (who do not own the requisite pollution rights), a market in these rights is rendered all the less likely.

Essentially, Dolan is mired in a static model, in terms of both transaction costs and smoke abatement technology.[76] Consider for example, the open-ended smokestack. Open-ended, that is, to the air and thus to the property of other people. Is it difficult to imagine the result if, in the 1830s, the legal regime of property rights had not been overturned. We would have long ago begun enjoying a nonpollution intensive technology where there were no open-ended smokestacks. Instead, these pipes would have lead back to chemical cisterns, the latter to capture otherwise errant soot particles.

Dolan ends his analysis with an obeisance to cost-benefit analysis. As we have seen, this concept is fundamentally defective. Utility for different people is not comparable. How does Dolan know that at the "opposite margin (upholding victim-landowner rights) marginal abatement costs exceed the marginal benefits of abatement?" He cannot know, nor can he adduce any evidence for this conclusion.

The beauty of the property rights approach, in contrast, is that it need not become mired in these subjective quicksands. It assigns property to its rightful owners, and places the burden of purchase on those who would alter these allocations.

CONCLUSION

In short, the introduction of marketable trading permits into environmental economics is a major innovation. These permits allow "market" forces to be unleashed into what would otherwise be a command system. Marketable trading permits result in a much more efficient allocation of resources, which makes it possible to have both less pollution and lower operating costs.

However, they suffer from a major structural deficiency because trading permits are, in effect, a license to pollute, and thus, a license to violate property rights. A true market regime seeks to recognize rather than ignore property rights. The problem with recognizing property rights in this area of environmental economics is that air, water, roads, many forests, and so forth, are publicly owned, which is effectively no ownership. As a first step toward implementing a true market regime, we must find ways to privatize these "commons" so

76. This applies to most traditional economic commentators on this issue.

that market forces will be able to operate to reduce pollution and costs. A great deal of research remains to be done in this area and now that the problem has been identified, there is a clear direction for that research.