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INTERNATIONAL TRADE AND ENVIRONMENT: LESSONS FROM THE FEDERAL EXPERIENCE

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This Article has two objectives. First, the Article will develop a conceptual framework for analyzing the interrelationship between trade restraints and environmental protection policy. Second, it will draw from the experiences of two federal-type political systems—the United States and the European Community—potential lessons for the international institutional treatment of trade and environment issues. The Article does not deal with many other aspects of trade and environment issues, such as the use of pollution-control subsidies, or the impact of trade liberalization on environmental quality, or whether treaty negotiations should be subject to environmental assessment procedures. Nor does it offer a detailed review of relevant legal texts and decisions. Its aim is to provide an analytical structure for thinking through the issues of law and policy presented by trade-related environmental regulation.

I. THE FREE TRADE REGIME

The cornerstone of the case for free trade is the mutual economic benefit resulting from trade among nations with differences in comparative advantage in producing goods and services. This concept has been characterized by Paul Samuelson as “the sole proposition in the Social Sciences which is both true and non-trivial.”¹ In the classic Ricardian conception, comparative advantage was based on relative differences in factor endowments—such as the character of agricultural land, climate, timber, and mineral resources—among nations.² But an enlarged conception of comparative advantage has come to include differences in human capital and industrial and technological infrastructure. No reason exists in principle why comparative advantage should not also encompass differences in national economic, social, and regulatory policies and legal and administrative systems. Economists also regard national differences in the ability of ecosystems and populations to assimilate pollution as an element of comparative advantage.³

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1. David Robertson, *Trade and the Environment: Harmonization and Technical Standards*, in *INTERNATIONAL TRADE AND THE ENVIRONMENT* 309, 311 n.6 (Patrick Low ed., 1992).

2. DAVID RICARDO, *PRINCIPLES OF POLITICAL ECONOMY AND TAXATION* 113-17 (London, George Bell & Sons 1891).

3. For example, a nation like Britain with relatively short, fast-running rivers will experience less damage from water pollution than Germany or France. Likewise, a sparsely populated nation can locate industrial facilities so as to suffer less pollution-related illness than a small, densely populated nation.

There are additional reasons, beyond comparative advantage, why free trade should enhance the welfare of all nations engaging in trade.⁴ A wider market enhances the opportunity to realize economies of scale. It also promotes specialization, with attendant gains in productivity. A greater array of suppliers stiffens the efficiency-promoting discipline of competition. The wider network of international contacts accelerates the diffusion of knowledge and technological innovation.⁵

Experience confirms the economic benefits of a free trade regime (FTR). Empirical studies show a strong correlation between the degree of trade liberalization and economic growth rates among different nations and a similar correlation between changes in trade policy and growth in individual nations.⁶

The economic benefits from a common market and the perceived detriments from trade rivalry among the states under the Articles of Confederation were an important impetus for the ratification and adoption of the United States Constitution.⁷ The expected gains from the creation of a common market and common currency were not purely economic; it was thought that economic integration would advance political integration and mutual security. Similar considerations propelled the creation and subsequent strengthening of the European Community. Economic rivalry was thought to stimulate political conflict and to have contributed to the outbreak of three large-scale wars in Europe within seventy-five years. Europeans believed that economic integration would ameliorate the causes of political and military conflict.

Economic integration was seen as a global imperative after World War II. Many western leaders thought that restrictive trade policies by major nations in response to the Great Depression were a major cause of the continued economic stagnation of the 1930s. The development of a coordinated international monetary policy at Bretton Woods and the promotion of trade liberalization through the General Agreement on Tariffs and Trade (GATT)⁸ were cornerstones of global prosperity. The post-war creation of a global FTR was a major factor behind the spectacular growth of the global economy in the following three decades.⁹ The founders of the post-war economic order also had political and security objectives, believing that economic interdependence would reduce political and military conflict.

Given the benefits of free trade, why should nations ever seek to impose barriers to it? In most cases, restrictions are imposed to protect the interests

4. This paragraph and the four following draw heavily on Rdetzki, *Economic Growth and Environment*, in *INTERNATIONAL TRADE AND THE ENVIRONMENT*, *supra* note 1, at 121.

5. ANNE O. KRUEGER, *PERSPECTIVES ON TRADE AND DEVELOPMENT* 57-62 (1990); Anne O. Krueger, *Trade Policy as an Input to Development*, 70 *AM. ECON. REV.* 288 (1980).

6. See KRUEGER, *supra* note 5, at 212.

7. See MERRILL JENSEN, *THE NEW NATION: A HISTORY OF THE UNITED STATES DURING THE CONFEDERATION, 1781-89* (1950).

8. General Agreement on Tariffs and Trade, Oct. 30, 1947, 61 *Stat.* A11, 55 *U.N.T.S.* 187 [hereinafter GATT].

9. JAGDISH BHAGWATI, *PROTECTIONISM* (1988).

of producers and workers who would be injured by greater competition. In many of these cases, however, a nation's consumers would suffer greater losses in welfare from trade barriers than the benefits that these barriers afford to producer interests. Trade barriers, in most cases, reflect superior organizational strength and political power on the part of producer interests over consumer interests. The benefits provided to consumers are by import competition not salient. By contrast, the social costs and dislocations from import competition often take dramatic form—plant closings and job losses. The benefits provided to consumers are less salient. The fact that these losses are inflicted by foreign producers and can be blunted by trade restrictions aimed exclusively at them provides a stronger political rallying point for competition-restraining measures than in the case of dislocations caused by domestic competition.

Trade barriers may also reflect a demand for national autonomy in social and economic policy. Sentiment exists that a political community should be able to set its own priorities and principles, rather than have them dictated by remote economic forces. Some states with centrally-planned economies have adopted trade restrictions for fear that a FTR would disrupt their ability to carry out central planning. A related concern is that if political integration follows economic integration, a nation's political autonomy will be further compromised. These concerns were shared by the Anti-Federalists who opposed ratification of the United States Constitution¹⁰ and by the Danish voters who opposed Danish participation in a post-Maastricht European Community.¹¹ This concern for policy independence has become especially prominent in the environmental context, as nations have sought increasingly to impose restrictions on trade in the name of health, safety and ecological protection.

II. ENVIRONMENTAL PROTECTION IN THE CONTEXT OF ECONOMIC INTEGRATION: THE FEDERAL EXPERIENCE

This section addresses the different types of externalities or spillovers that environmental problems can create in a system of distinct states or nations that are economically integrated through a common market. Those problems have been addressed in two federal-type systems with different forms of political integration—the United States and the European Community.

An important methodological point must first be addressed. The analytic and institutional interrelations between trade policy and environmental protection policy, and the institutional response to those interrelations, can be better understood if both types of measures are regarded as aimed at

10. See Ralph Ketcham, *Introduction to THE ANTI-FEDERALIST PAPERS AND THE CONSTITUTIONAL DEBATES* 17 (Ralph Ketcham ed., 1986); HERBERT J. STORING, *WHAT THE ANTI-FEDERALISTS WERE FOR* (1981).

11. See *To Be or Not to Be E.C.; The Danes Reject the European Treaty and All Hell Breaks Loose*, TIME, June 15, 1992, at 22.

promoting human welfare, broadly understood. I envision a conception of human welfare akin to that of John Stuart Mill, which goes beyond the maximization of existing preferences to include qualities of diversity, education, aspiration, reflection, and solidarity.¹² This conception rejects the position that environmental protection is an autonomous moral duty—an independent absolute. If this were so, trade policy would either be reduced to a mere means for carrying out this duty, or would also rest on some other independent duty, such as furthering human welfare, that would then have to be reconciled somehow with the duty of environmental protection. Many environmentalists believe that there is a duty of environmental protection. But that view is not shared by the majority, particularly in the global context. It thus seems appropriate, for the present, to proceed on the premise that environmental protection policy as well as trade policy are both appropriately aimed at promoting, in different ways, human welfare, broadly understood.

Under standard welfare economic reasoning, environmental problems arise because production and consumption activities result in adverse effects on others, which are not reflected in market transactions. Because of such externalities or spillovers, producers and consumers cause excessive amounts of pollution and other forms of environmental degradation. The potential responses to this problem include improved private legal remedies for those adversely affected, government regulation, and pollution taxes or other economic incentives. Such measures should be designed to reduce spillovers to the point where the costs and other burdens of additional reductions exceeds the social benefits.

The analogous problem of environmental policy in a system of separate states or nations is that environmental practices by one state can diminish, through externalities or spillovers, the welfare of those in other jurisdictions. In order to analyze the problems that such externalities cause and the possible means of dealing with them, it is essential to distinguish several different types of externalities. One set of spillovers is created by trade in products and product regulation. A second set is generated by trade in and regulation of natural resources. A third set of externalities is associated with trade in and regulation of wastes. A fourth set is created by the environmental effects of manufacturing and other processes for producing goods and services, and by the regulation of such processes. Because of these externalities, trade restrictions—broadly defined to include tariffs and other charges as well as bans, quotas, and regulatory requirements—may be necessary in order to promote human welfare. But a danger exists that such restrictions can be used for protectionist or other welfare-reducing purposes.

The potential conflict between environmental measures and the FTR cannot be dissolved by invoking the "polluter pays" principle, which holds that the social costs attributable to pollution and other forms of environ-

12. See Richard B. Stewart, *Regulation in a Liberal State: The Role of Non-Commodity Values*, 92 YALE L.J. 1537 (1983).

mental degradation should be internalized to the activities that cause them. In the absence of such internalization, free markets will generate excessive amounts of environmental harm, reducing societal welfare. Pollution taxes and environmental regulation are potential means of correcting such market failures. If state B has more stringent environmental standards than state A, it might, for example, impose a duty on imports from A equal to the social costs attributable to A's less stringent regulation and justify the tax as a means of promoting market efficiency and social welfare.¹³

There are, however, major difficulties in determining the social costs of environmental degradation. Those costs are a function of the harms caused or risks of harm posed by environmental degradation and the economic value that individuals or societies place on avoiding such harms or risks. That value is in turn a function of individual or societal preferences for environmental quality versus other goods and services; wealth; and risk aversion. There is often considerable uncertainty and sharp disagreement about the extent of harm caused, or risks posed, by environmental degradation. Individuals and societies also differ substantially in preferences, wealth, and risk aversion. As a result, there will be wide differences in assessments of the social costs of environmental degradation, and corresponding disagreements about the appropriate stringency of the measures needed to internalize those costs to the activities that cause them. The mere fact that one nation's environmental standards are less stringent than another's does not establish that the former is a "trade distortion."

There is no objective, uniform yardstick for measuring the social costs of environmental degradation that could be used to resolve disagreements between countries like A and B over the appropriate stringency of environmental measures and determine whether the restraints on trade imposed by a particular measure are justified by the environmental harms or risks in question. The adverse effects of a given level of pollution may vary among states and regions because of geographical and ecological differences. More fundamentally, societies often differ in preferences, wealth, and risk aversion. As a result, different states and nations may appropriately place different values on environmental protection. It is accordingly quite difficult to determine whether the environmental measures adopted by a given state or nation are appropriate and reasonable, rather than excessively lax or disproportionately stringent. It is also quite difficult to decide whether measures which restrain trade and benefit local industry are justified by the environmental benefits they are supposed to secure or are disguised protectionism. In these circumstances, it is not easy to develop principles and institutions to harmonize trade and environmental goals in a world of many states or nations.

A. *Products*

Assume that producers in state or nation A make a product which they wish to sell in B. B, however, prohibits or (more often) imposes restrictions

13. Alternatively, A might exclude B's products until B adopts more stringent regulatory measures.

or in some cases a tax on the import and sale of such products in B on the ground that the product poses an undue risk to health, safety, or the environment, or that such risks are not adequately disclosed in the product's labelling. For example, the United States excludes imports of food products with pesticide levels exceeding the tolerance levels used to regulate domestic food products. In the case of adverse effects on consumers of the products, such regulation must be based on a judgment that consumers are not adequately informed of the risks in question or shortsightedly fail to give them sufficient heed. In the case of adverse effects on third parties and the natural environment, such regulation is premised on direct externalities. The restrictions typically take the form of regulatory requirements relating to the product's design, performance, or labelling.

Assuming that the product is sold in A without such restrictions, why should B prohibit or restrict a product that A allows? B's citizens may place a greater value on health, safety, and environmental protection than those of A. This decision may reflect a stronger preference for environmental quality relative to other goods and services. B's citizens also may be wealthier than A's; the demand for environmental protection typically rises with income. Institutional structure also influences environmental policy. Even if preferences and wealth of consumers in the two states are similar, B's political and administrative institutions may, for various reasons, give greater weight to preferences for environmental protection than those of A. Alternatively, A may allow marketing of the product because of a political judgment that the benefits to its producers outweigh the environmental risks.¹⁴ B, however, has no interest in the welfare of A's producers and judges that the risks to its consumers outweighs the benefits. This conclusion may be especially likely if the product is not produced at all in B or is produced only in small quantities. B may also impose restrictions on imports in order to protect its producers. This restriction may take the form of a discriminatory ban or other regulation of imported but not domestically manufactured products or, more often, regulatory requirements and procedures that impose a greater effective burden on imports than on similar domestic products or domestic substitutes for the imported product. The regulatory measure may be neutral on its face, but have the practical effect of favoring domestic producers. Examples include the ban by Minnesota of nonrecyclable plastic milk cartons but not paperboard cartons (Minnesota has a substantial timber products industry)¹⁵ and Canada's heavy tax on nonrecyclable beer containers, which has a disproportionate impact on U.S. producers.¹⁶ The resulting disproportionate impact, however, does not rule out the possibility that the measure will achieve significant environmental protection benefits.

14. See *Minnesota v. Clover Leaf Creamery Co.*, 449 U.S. 456, 458 (1981).

15. See *id.* at 474 (upholding Minnesota regulation).

16. See Nancy Dunne & Bernard Simon, *Canada-U.S. Beer War Gets Green Tinge*, *FIN. TIMES*, July 31, 1992, at 5.

Whatever the reason for such restrictions—and a given restriction may have several explanations—they undermine the FTR by harming foreign producers as well as both domestic and foreign consumers. Foreign producers are disadvantaged relative to B's producers, who can reap economies of scale in complying with B's regulatory restrictions because their sales in B are likely to be large compared to those of foreign producers. If different states adopt different restrictions, the ability of all producers to realize scale economies will be diminished, the transaction costs of achieving compliance with different requirements will be increased, and other benefits of free trade will be reduced. This will result in economic harm to consumers in all states, including those in B. Nonetheless, these detriments may well be outweighed by the protection afforded to B's consumers and its environment by the restriction.

Three institutional responses to this situation have arisen in the United States and the European Community. The first response is adjudication by a tribunal with authority over all of the relevant states, such as the United States Supreme Court and the European Court of Justice. The Supreme Court found in the Commerce Clause the implied power for the Court to invalidate state measures that unduly burdened the functioning of the common market among the states.¹⁷ The Court of Justice enjoys a more explicit constitutional power to the same end. These courts' task has been to determine whether the local benefits of a product restriction and the interest in local autonomy outweigh the detriment to the FTR.

Both courts have outlawed facially discriminatory state measures that impose restrictions on imported products but do not impose those same restrictions on domestic products. In the absence of facial discrimination, the analysis is more contextual. Several questions are relevant. How great is the environmental justification for the measure? How great is the detriment to trade? Are there ways of achieving a similar benefit through means that are less disruptive of trade? Is the measure framed in such a way as to give competitive advantage to local producers, and what is the justification for tailoring the restriction in this way as compared to other means of protecting the environment? What is the justification for special tests or inspection of imported goods, which may duplicate those already imposed by the exporting state? In these contextual evaluations, the ultimate judgment is one of proportionality: taking into account the importing state's sovereignty interest, is the restraint on trade (including protectionist effects) manifestly disproportionate to the environmental benefits achieved, considering the availability of other means of securing those benefits. In making such judgments it is a crucial question, which court decisions do not resolve,

17. See *Hunt v. Washington State Apple Advertising Comm'n*, 432 U.S. 333, 350-51 (1977) (discussing burden of state law on "common market" between states in violation of dormant Commerce Clause); *Pike v. Bruce Church*, 397 U.S. 137, 141-42 (1970) (discussing invalidity of state law under dormant Commerce Clause due to undue burden on interstate commerce).

whether the court is to weigh the detriment to the welfare of consumers in the state imposing the restriction, or only the welfare of out-of-state producers and consumers.¹⁸ The interests of in-state consumers are surely among those protected by the FTR; it would seem that detriments to their interests should accordingly be included in assessing the detriment to human welfare caused by trade restrictions. On the other hand, given the premise of political decentralization on which federal-type systems are founded, it would seem inappropriate for a suprastate tribunal to invalidate state legislation on the ground that the legislature had erred in determining which regulations would best advance the net interests of its citizens. In addition, it is difficult for a court to measure the relevant benefits and detriments. As a result, courts have invalidated such regulations only when they lack significant environmental justification, or a less trade restrictive alternative with comparable regulatory benefits is available, or the measure is clearly protectionist, or the detriments substantially outweigh the benefits. The ultimate test is a protectionist standard of net proportionality, deferentially applied: the extent of otherwise unobtainable environmental benefits must be weighed against the welfare detriments of trade restrictions, giving due respect to state political authority.

A second means of dealing with the impediments to the FTR posed by different state product standards is to harmonize such standards through consensus. While there have been successful efforts in the United States to harmonize state laws through the Commission on Uniform State Laws,¹⁹ those efforts have not included environmental product regulation. Industries in the United States and in the European Community have in some instances harmonized product standards—for boiler safety, electrical safety, and testing procedures—in order to forestall potentially divergent state regulation, but this technique has not been followed in the case of environmental product regulation. Such regulation is simply too controversial and divisive for consensus to succeed.

The third means of dealing with divergent state product standards is through national or Community legislation setting a uniform standard for all states. The technique of selective judicial invalidation of state regulation is a form of partial negative harmonization which operates at "retail," case-by-case. Legislation operates "wholesale" and involves affirmative harmonization requiring an across-the-board judgment of the appropriate degree of regulation of risk. To the extent that citizens in different states have different effective preferences for environmental protection and prod-

18. What if the product regulation also provides external benefits to other states? For example, if New York imposes stringent air pollution regulations on automobiles sold in the state, reduced emissions would benefit downwind states in New England. Such benefits should presumably be included in the suprastate calculus, although the issue does not seem to have arisen in any decided cases.

19. See, e.g., U.C.C., 1-5 U.L.A. (1958 as amended); UNIF. PARTNERSHIP ACT, 6 U.L.A. 9 (1914 as amended); REVISED UNIF. LTD. PARTNERSHIP ACT, 6 U.L.A. 290 (1992 Supp.) (1976 as amended).

users in different states are differentially affected by regulation (as they commonly are),²⁰ such legislation will involve a compromise among the interests in different states as well as between producer, consumer, and environmental interests generally. Even in the Community, where until recently environmental legislation required member state unanimity, such legislation has rarely followed a lowest common denominator approach, in which the least stringent regulation of any member state is adopted for all.²¹ This approach is never followed in the United States, where states with more stringent environmental regulations typically use majoritarian legislative processes to impose higher standards on states with less stringent regulation in order to curtail the competitive advantage which laxer regulation confers on industries located in those states.

When such harmonizing legislation has been adopted, the further question remains whether a state may impose a stricter product standard. Sometimes the legislation specifically prohibits such measures and in other instances explicitly permits them. More often the statute is silent or ambiguous, and the federal courts in the United States have been left to wrestle with the issue of preemption, sometimes applying a calculus analogous to that used in determining, in the absence of federal legislation, whether a state regulation offends the Commerce Clause. Such issues are just beginning to confront the Court of Justice.²²

Thus far we have been considering product bans or restrictions by the importing state. Logically, an exporting state could also impose such restrictions. For example, a state could prohibit the sale within the state of certain products deemed unduly risky and in addition prohibit its producers from manufacturing and exporting such products.²³ Apart from concern that domestically manufactured products would be illegally diverted to the domestic market, such measures would presumably be based on concern for the welfare of consumers or the environment in other states. Such measures, however, have rarely if ever appeared in the United States²⁴ or the European Community.

20. See ROBERT A. LEONE, *WHO PROFITS WINNERS, LOSERS, AND GOVERNMENT REGULATION* (1986).

21. See ECKARD REHBINDER & RICHARD B. STEWART, *INTEGRATION THROUGH LAW: ENVIRONMENTAL PROTECTION POLICY* 255 (1985). Much Community environmental legislation has been spurred by unilateral member state adoption of relatively aggressive product regulation, which in turn creates demand for Community development of a harmonized approach. See *id.* at 259. Recently, Germany's adoption of an ambitious packaging recycling law has stimulated the Commission to develop community legislation on the subject.

22. See Richard B. Stewart, *Environmental Law in the United States and the European Community: Spillovers, Cooperation, Rivalry, Institutions*, 1992 U. CHI. LEGAL F. (forthcoming 1992).

23. Logically, a state might permit domestic manufacture and sale of a product but prohibit its export. But apart from concern over depletion of scarce in-state resources, discussed below, it is hard to see why a state would adopt such a measure.

24. State prohibition laws are a possible example of product bans imposed by exporting states.

B. Resources

A state may impose restrictions or special taxes on the export or appropriation by out-of-state consumers or producers of in-state natural resources such as natural gas, fish, and wildlife. These restrictions are generally designed to reserve consumption of such resources to citizens of the state, or to restrict to in-state producers the right to process the resource and thus reap added value. Such discriminatory measures would be inadmissible in the case of ordinary products, but have sometimes been thought justified on the ground of a special interest of a state and its citizens in the state's natural resources. The United States Supreme Court, however, has found such resources to be articles of commerce like any other and invalidated such discriminatory measures when challenged as violative of the Commerce Clause.²⁵ The offensive externality is a denial of resource access to out-of-state consumers and producers, undercutting the benefits of a FTR. Such restrictions can not be justified by resource conservation objectives, because similar restrictions are not imposed on in-state consumers and producers. To the extent that the state allows a natural resource to be treated as an article of commerce, it must be available on equal terms throughout the common market.

The Court of Justice has apparently not addressed such issues. There have been no substantial efforts to harmonize state laws regarding exploitation of natural resources, either through consensus or legislation, in the United States or the Community.²⁶

C. Wastes

Waste can be regarded as a negative product that commands a negative price; generators have to pay others to store and dispose of their wastes.²⁷ Free trade in wastes²⁸ should promote joint welfare for reasons similar to those that justify free trade in ordinary goods and services: economies of scale in disposal techniques, comparative advantage based on geology and transportation access, and innovation through specialization. States in the United States have enacted legislation banning or imposing special restrictions on the import and disposal within the state of out-of-state wastes. States have sought to justify such measures by treating the issue as one of

25. See, e.g., *Pennsylvania v. West Virginia*, 256 U.S. 553 (1923) (invalidating West Virginia restrictions on exports of natural gas).

26. In the United States, the federal government owns one-third of the land and has adopted national laws and policies governing their use. In a few instances, such as the Endangered Species Act, it has imposed restrictions on the use of nonfederal resources. 16 U.S.C. §§ 2404-2408 (1988).

27. If a waste commands a positive price because of the potential for recycling, it can be regarded as a product or resource with potentially hazardous characteristics.

28. A regime of free trade in wastes assumes that the recipient of the wastes commands and is paid a market price for disposing of them. Prohibiting illegal cross-border dumping of wastes is entirely consistent with and indeed necessary to support a FTR.

natural resources; the use of a state's land or air to dispose of waste ought to be limited to in-state producers.²⁹ Unlike discriminatory product import restrictions, such measures benefit local "consumers" of environmental quality, by reducing their exposure to waste hazards, as well as local producers of waste. The Supreme Court, however, has properly ruled that waste can be an article of commerce and that discriminatory state measures that allow disposal of in-state but not out-of-state wastes offend the Commerce Clause because they impose trade restrictions that can not be justified by the asserted environmentally protective purpose of the legislation.³⁰ But the Court of Justice recently sustained a ban by the Belgian region of Wallonia against imports of nonhazardous wastes.³¹ This decision may well stimulate European Community legislation on the subject. There have been some federal legislative efforts to address the issue of radioactive waste disposal in the United States,³² albeit with little success.

29. In addition, supporters of such legislation have asserted that a ban on out-of-state wastes is necessary to create adequate incentives for minimizing waste generation and providing adequate disposal capacity. But this argument generally fails to address the question of why a disposal fee adequate to cover the full social costs of waste disposal could not provide the appropriate incentives.

30. See *Chemical Waste Management, Inc. v. Hunt*, 112 S. Ct. 2009 (1992) (invalidating discriminatory waste disposal fee imposed by state on imported wastes); *Fort Gratoit Sanitary Landfill, Inc. v. Michigan Dep't of Natural Resources*, 112 S. Ct. 2019 (1992) (invalidating state ban on county waste importation, on Commerce Clause grounds); *Philadelphia v. New Jersey*, 437 U.S. 617 (1978) (invalidating state ban on waste importation as violating Commerce Clause). The restriction can also be viewed as a natural resource issue. Use of the State's land for waste disposal should be limited to the citizens of the state. But this shift in rationale would not change the result. The discrimination in favor of in-state users of that resource would likewise be invalid under the Commerce Clause.

An intriguing theoretical question, which has yet to be squarely presented in litigation, is whether facially nondiscriminatory state measures that severely restrict waste disposal in the state might be invalidated on the ground that the state is well suited, by reasons of geology and other factors, to serve as a disposal site, and that the benefit of reduced risk to residents of the state is outweighed by the detriment to producers and consumers in other states, who will have to bear disproportionately high disposal costs and environmental risk as a result. In theory, the basic principle of proportionality applied in product regulation should apply, but the fact that the measure is designed to favor in-state consumers rather than producers, and that the calculus must include out-of-state environmental as well as economic costs, makes its application quite difficult.

31. Case C-2/90, *Commission v. Belgium*, (July 9, 1992); *EC Court Ruling May Allow Restrictions on Waste Imports*, 15 Int'l Env't Rep. (BNA) No. 14, at 462 (July 15, 1992) [hereinafter *Waste Imports*]. The Court of Justice sustained an "emergency" ban by Wallonia on imports of nonhazardous waste, notwithstanding the court's acknowledgement that waste can be "goods" of commerce. The court gave weight to the goal of member state self-sufficiency in waste disposal. The Commission had challenged the ban as a violation of the Treaty of Rome.

32. *E.g.*, Low-Level Radioactive Waste Policy Amendments Act of 1985, Pub. L. No. 99-240, 99 Stat. 1842 (codified at 42 U.S.C. §§ 2021b-2021j (1988)) (providing monetary and waste disposal site incentives to states to encourage stricter waste disposal practices and providing that states that fail to meet federal standards must take title to waste and thus assume all liabilities related to waste); *New York v. United States*, 112 S. Ct. 2408 (1992) (upholding monetary and access incentive provisions of Act and invalidating take title provisions of Act).

D. Processes

Regulation of in-state manufacturing and resource harvesting or extracting processes by different states is not so clearly offensive to the FTR as the measures surveyed above because it does not directly obstruct the free flow of goods and services among states. But pollution and other forms of environmental degradation caused by processes and process-based environmental regulation can create several different types of troublesome externalities. These externalities include the following:

Pollution spillovers—If some of the pollution generated in A is deposited in B, A's regulation of pollution by its producers is likely to be inadequate because A will give little or no weight to the interests of B's residents.³³ If pollution is exactly reciprocal—if B pollutes A just as much as A pollutes B—there may be incentives for cooperative approaches to regulation, but such reciprocity is rare. The externality created by pollution generally consists of negative use value; pollution increases the economic costs or diminishes the benefits associated with resource use. Examples would include the costs of purifying polluted water for drinking or reduced crop yields or diminished recreational fishing opportunities due to air and water pollution.³⁴

Resource externalities (use values)—A may be exploiting its resources in a wasteful fashion, running down the resource stock at an excessive rate and depriving consumers and producers in B of the benefit of future use of those resources. For example, A may be overcutting its forests, driving up the future cost of timber, or recklessly destroying pristine areas that residents of B would spend money to visit. On standard economic assumptions, it is difficult to understand why A would engage in such behavior, assuming that the lost future benefits are greater than the benefits of present use;³⁵ shortsightedness, corruption, or some other form of institutional failure must be invoked to explain such behavior.

Preservation externalities (nonuse values)—A may be exploiting its resources in ways that deprive citizens in other states of the satisfaction of knowing that those resources are preserved, independent of any use that might be made of them. Examples include the destruction of pristine environments and the eradication of endangered species. Again, the dimi-

33. Pollution, like illegally exported waste, can be viewed as a negative product that is not exchanged in markets. However, the ability of a state to exclude, through self-help, externally-generated pollution is far more limited than its ability to exclude externally generated waste that must be transported across state lines by vehicles, railroads, aircraft, or ships.

34. Pollution can also impair nonuse "existence" or "bequest" values by degrading pristine environments that individuals wish to see preserved for reasons quite apart from any use that they might make of such environments by, for example, visiting them. See Frank B. Cross, *Natural Resource Damage Valuation*, 42 VAND. L. REV. 269 (1989).

35. The extent, if any, to which future environmental benefits should be discounted to net present value in determining whether to incur costs today in order to provide such future benefits is much debated. See Michael S. Baram, *Cost-Benefit Analysis: An Inadequate Basis for Health, Safety, and Environmental Regulatory Decisionmaking*, 8 ECOLOGY L.Q. 473 (1980).

nution in welfare associated with the loss of these nonuse values may exceed the benefits from current resource exploitation. Unlike the case with use values, however, it is quite easy to understand why this form of welfare impairment might arise. Preservation of natural resources for nonuse values is a collective good. A and its citizens can not selectively provide the benefits of preservation to those outside the state who would be willing to pay to have those resources preserved. Because of free-rider effects, those outside the state are unlikely to bond together and pay for such preservation. Accordingly, the economic incentives of A and its citizens to preserve such resources will not be adequate.

Competitiveness externalities—A may fail to adopt strong environmentally protective process regulations for fear that its industries will be competitively disadvantaged in relation to industries in B, who may fail to adopt similarly strong policies. B and others may reason likewise. The result may be a “race to the bottom” that leads everywhere to lower levels of environmental protection than all states would prefer. The externality here consists of uncertainty regarding the reaction of each state to the environmental policy of every other state and the resultant tendency to take a risk averse approach to the threat of job loss and industrial dislocation by adopting less stringent environmental measures.³⁶

A given activity may involve several or all of these analytically distinct types of spillovers. Consider, for example, lax air pollution controls in A that result in destruction of A's economically valuable tropical forest, attendant species extinction, and transport of air pollution to B. B's industries incur a competitive disadvantage because of B's more stringent pollution controls. B has little or no ability, acting unilaterally, to prevent these spillovers. It is generally not feasible physically to block pollution spillovers. B can not prevent A's destruction of natural resources located in A. B can combat any competitive disadvantage suffered by its industry only by lowering its own environmental regulatory standards or giving its regulated industry a subsidy.³⁷

36. The “race to the bottom” argument is carefully examined and criticized in RICHARD REVESZ, *REHABILITATING INTERSTATE COMPETITION: RETHINKING THE “RACE TO THE BOTTOM” RATIONALE FOR FEDERAL ENVIRONMENTAL REGULATION* (forthcoming). His basic critique of the argument is that just as consumer welfare is promoted by competition among different sellers of goods and services, so is it also enhanced by competition among states in providing different environmental regulatory regimes for industry and residents. Because states will differ in their geography, ecology, state of development, and citizen preferences, there is no reason to suppose that such competition will result in uniform or unduly lax regulation. The other forms of externalities discussed in this article are nonpecuniary externalities—environmental and health harms or risks that are not reflected in the market prices of factor inputs or goods and services. However, competitiveness externalities are pecuniary externalities. According to standard economic theory, pecuniary externalities, which are reflected in market prices, should not result in market failures. One would probably have to invoke game theory and problems of uncertainty and strategic interdependence in order to explain how such competition might lead states to adopt laxer environmental regulation than states would otherwise prefer.

37. B could offer A a side payment to reduce these various externalities, but strong ethical and political inhibitions exist against such payments.

Conceivably B could seek to deal with such externalities by excluding imports of products manufactured by laxly controlled plants in A. B could also impose a tariff on such imports equal to the difference in pollution control compliance costs incurred by industries in A and those in B. Such measures might, however, be challenged as violative of the Commerce Clause or the Treaty of Rome.³⁸ The question, however, is moot, for no state in the United States or the European Community has apparently attempted to impose such measures, and no law exists on the issue. A federal-type system could offer the same three solutions to these process-based spillovers that have been discussed above in connection with product regulation: adjudication, harmonization by consensus, and harmonization through legislation.

B might challenge A's lax environmental measures in court on the ground that the resulting negative externalities unjustifiably diminish the welfare of all states. It would, however, be difficult to fit such a claim within traditional common market jurisprudence. A is not restraining free trade. If anyone is restraining trade, it is B, by trying to impose higher production costs on A. Even if a court were to entertain such a claim, how it would evaluate B's grievance? It would have to face all of the difficulties in evaluating the social costs of pollution discussed above.³⁹

A would respond to B's claim that it has an unfair competitive advantage by seeking to justify its less stringent pollution controls as appropriate to its economy, stage of development, environment, and the preferences of its citizens. For reasons previously discussed, a court would have great difficulty in evaluating these arguments, or in concluding that A had struck an irrational or arbitrary balance between environmental quality and other objectives. It would also have to give some deference to A's interests in political autonomy. Even if a court were to conclude that A's standard was arbitrary, what remedy would it afford? It could not simply require that A adopt B's standards, but would presumably have to determine the lowest nonarbitrary standard that A could adopt. It would then have to require that A adopt, implement, and enforce such a standard.

With regard to B's claims of resource and preservation spillovers, the court would first have to evaluate their magnitude, an extremely difficult task, especially in the case of nonuse values. The court would then have to weigh these negative externalities against A's justifications for its less stringent standard and its claims of political autonomy. Again, if the court concluded that A's standard was arbitrarily low, it would have to determine the minimal nonarbitrary standard and require A to adopt and enforce it. The analysis would be similar for pollution externalities. In many cases, several or all of these spillovers would be presented, further complicating the analysis. Any court would understandably balk at taking on these tasks.

In the case of pollution spillovers, a potential alternative remedy exists in the form of damages for pollution injury. Because of the diffuse nature

38. U.S. CONST. art. I, § 8, cl. 3; Treaty Establishing The European Economic Community, Mar. 25, 1957, 298 U.N.T.S. 11 [hereinafter Treaty of Rome].

39. See discussion *supra* part II.

of environmental harms and the large number of pollution sources, private damage litigation is generally an ineffective remedy. Theoretically, state B might sue state A for the harm inflicted on B's citizens as a result of the pollution originating in A. But unless facilities owned or operated by A were emitting the pollution, the court would have to make A liable for the interstate effects of its citizen's actions—a not illogical but nonetheless improbable jurisprudential revolution.⁴⁰ In addition, it would be extremely difficult to resolve disputes over causation and to quantify and monetize the injury occurring from most types of pollution spillovers. Alternatively, B could be allowed to impose a tariff on imports from A equal to the environmental damage in B, but the amount of such damage would again be extraordinarily difficult to determine.⁴¹

Given these difficulties, it is not surprising that, in the absence of relevant legislation imposing an authoritative standard, no state has sought to challenge assertedly inadequate state regulation on such grounds in the courts of the United States or the European Community. Nor has harmonization by consensus proved an effective solution to the problems generated by different process regulatory standards in different states. The conflicts of interest among states, different industries, and environmental advocates have been too diverse and intense for resolution by such methods.

Harmonization of environmental regulation of processes through central command and control regulatory legislation has been the solution adopted in the United States and the Community to deal with process spillovers. Often, such legislation imposes a uniform minimum level of controls required of all sources. States are typically left free to adopt more stringent requirements. Unlike the case with state product regulations that are more stringent than the national minimum, more stringent state process regulations do not impose barriers to trade or generate externalities of the sort described above.⁴²

The determination of the appropriate stringency of regulatory standards, which legislation in the United States but not in the Community has generally left to administrators, must inevitably strike a balance between environmental and economic considerations and the differing interests of states and industry groups. The structure of standards is often as important as the level set because adoption of common standards does not mean that all firms in a given industry will be faced with the same compliance costs. For example, uniform environmental quality standards—specifying the maximum permissible concentration of pollutants in the air or water—give a relative

40. See Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 *YALE L.J.* 1196 (1977) [hereinafter Stewart, *Pyramids of Sacrifice?*].

41. Also, there are theoretical grounds for concluding that such a tariff would not produce the appropriate level of pollution control in A. See WILLIAM J. BAUMOL & WALLACE E. OATES, *THE THEORY OF ENVIRONMENTAL POLICY* (2d ed. 1988).

42. More stringent process regulation by B may, by lowering the level of economic activity in B, nonetheless have the indirect effect of lowering economic activity in A.

advantage to those states where air, or water is relatively unpolluted because they can accommodate new industry and additional pollution without violating the standards. By contrast, uniform technology based standards deny such states competitive advantage, although different sources will face different compliance costs depending on their circumstances (including such things as a plant's age or processes) and precisely how the standards are framed. Different states and businesses will also be affected differently by a system that imposes more demanding standards on new sources than on existing sources as compared to a system that imposes the same controls on both.

The struggle among the contending interests has resulted in extremely complex regulatory legislation in the United States, of which the Clean Air Act is the most notable example.⁴³ For example, regional and other political and economic conflicts blocked congressional agreement on measures to deal with acid precipitation for thirteen years.⁴⁴ The problem of reaching workable compromise has been even more notable in the Community, which until recently could enact environmental legislation only by unanimous agreement in the Council.⁴⁵ There has been growing interest in the United States and the Community with the use of economic incentives, such as taxes and transferrable permits, in lieu of command and control regulation to achieve environmental goals. By lowering the costs of reaching agreement and affording states and industry greater flexibility, such measures may facilitate agreement. For example, in the United States the legislative logjam on acid rain was broken by adoption of a Bush administration proposal to use a system of transferrable pollution permits to reduce sulfur emissions.⁴⁶

Legislation is generally not aimed at one particular kind of spillover, although pollution spillovers and economic competition among states for industry have figured prominently in the history of legislation both in the United States and the Community. In the 1977 Clean Air Act Amendments Congress did, however, specifically address preservation spillovers by imposing special limitations on pollution increases (and therefore on development) in pristine areas.⁴⁷ Nor does legislation provide explicit remedies

43. The Clean Air Act of 1963, Pub. L. No. 88-206, 77 Stat. 392 (codified as amended at 42 U.S.C. §§ 1857-1857g (1990)).

44. See generally Theodore L. Garret & Sonya D. Winner, *A Clean Air Act Primer: Part I*, 22 *Envtl. L. Rep. (Envtl. L. Inst.)* 10,159 (Mar. 1992).

45. See Christian Zacker, *Environmental Law of the European Economic Community: New Powers Under the Single European Act*, 14 *B.C. INT'L & COMP. L. REV.* 249, 254 (1991) (describing qualified majority voting procedures adopted by Single European Act). The Maastricht Treaty would further expand the use of qualified majority voting in community environmental legislation.

46. See Garret & Winner, *supra* note 44, at 10,162.

47. Clean Air Act Amendments of 1977, Pub. L. No. 95-95, 91 Stat. 685 (codified at 42 U.S.C. §§ 7450-7459 (1988)) (amended 1990). Industrial and labor interests in the Midwest and Northeast supported such legislation in order to discourage shift of industrial development to the South and West. See B. Peter Pashigian, *Environmental Regulation: Whose Self-Interests Are Being Protected?*, 23 *ECON. INQUIRY* 551 (1985).

for "retail" disputes, where a particular state complains that an upwind or upstream states is creating excessive pollution spillovers notwithstanding its compliance with uniform standards.⁴⁸

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The experience in federal-type systems such as the European Community and the United States thus illustrates important differences in the environmental, economic, political, and institutional implications of different kinds of externalities.

III. SPECIAL FEATURES OF TRADE AND ENVIRONMENT ISSUES IN AN INTERNATIONAL SETTING

The natural, economic, and institutional features of the international setting give trade and environment issues a different character than those in a federal-type system such as the United States and the European Community.

Some resources are beyond the territorial jurisdiction of any state. The most notable examples are Antarctica, the oceans, and the living resources which each contain. The global atmosphere is likewise outside the jurisdiction of any nation, although this feature does not distinguish it from airsheds shared by states in a federal-type system. What distinguishes the global atmosphere from regional airsheds (apart from the fact that it extends over areas, such as Antarctica and the oceans that are not within any state's territorial jurisdiction) is the more or less uniform mixing within the atmosphere of certain pollutants, such as Greenhouse gases (GHGs) and Chloroflourocarbons (CFCs), creating a situation of reciprocal pollution.⁴⁹

There are many more nations in the world than are part of the United States, much less the European Community. Moreover, far greater disparities exist among world nations—in terms of natural resources, economic development, wealth, education, and governmental systems—than are found in federal-type systems. Even the North/South division that has figured so prominently in the UNCED Rio "Summit" and other discussions of international environmental law and policy ignores many differences among the "North" and the "South" nations. For example, the Organization of Petroleum Exporting Countries (OPEC) nations, the "Asian Tigers," the nations of sub-Saharan Africa, and the Latin American countries have quite divergent interests.

There is no international legislative authority with power to enact statutes that bind nations. The World Court exercises adjudicatory authority only with respect to controversies between nations as such, when such

48. *Arkansas v. Oklahoma*, 112 S. Ct. 1046 (1992); *City of Milwaukee v. Illinois*, 451 U.S. 304 (1981).

49. The adverse environmental effects of stratospheric ozone depletion and global warming are not, however, uniform across nations.

nations have voluntarily consented to the Court's jurisdiction.⁵⁰ That jurisdiction is limited and rarely invoked. The adjudicatory authority of GATT tribunals and other tribunals created by bilateral or regional trade or environmental agreements such as the United States-Canada Free Trade Agreement (FTA)⁵¹ has been used only intermittently. The underdeveloped state of international institutions has made it far more difficult to develop either a FTR or an effective system of environmental protection among nations than among the states in a federal-type system like the United States or the European Community. They likewise greatly complicate the problem of reconciling free trade and environmental protection.

The GATT is a world FTR regime created by consensus among the participating nations.⁵² Some of its basic ground rules, such as the requirement of national treatment and provisions recognizing, within limits, the authority of nations to exclude risky products, are consistent with those developed by the United States Constitution and the United States Supreme Court, and by the Treaty of Rome and the European Court of Justice.⁵³ There are special provisions, however, such as those recognizing the nations' interest in avoiding balance-of-payments problems, that are unique to an international system of independent nations. The GATT also provides for dispute-resolution institutions—panel tribunals with a right of appeal to a council composed of representatives of all nations that are parties to the GATT—to make the inevitably contextual judgments involved in application of these broad principles in particular cases. The procedure for appeal of GATT panel decisions to an essentially political process of negotiation among participating nations in the council again reminds us that the GATT is an association of independent nations and not a federal-type system that establishes sovereign suprastate authority. The GATT does not specifically address environmental issues as such. A working group on trade and environmental issues, authorized in 1971, had never met until recently, and environmental groups have come to regard the GATT as at best indifferent and often hostile to environmental concerns.⁵⁴

International environmental protection has theoretical roots in customary international law, which has articulated a general obligation of nations not to act in ways that inflict injury on the territory of another nation. But the precise nature and content of this obligation remains quite unclear because virtually no relevant decisions have been made by the World Court or other international tribunals. Most international environmental law has grown out of bilateral or multilateral treaties.⁵⁵ The negotiation of these

50. See MANLEY O. HUDSON, *THE PERMANENT COURT OF INTERNATIONAL JUSTICE* 18-21 (1925); MANLEY O. HUDSON, *A PERMANENT COURT OF INTERNATIONAL JUSTICE 1920-1942*, at 410-11 (1943).

51. Free Trade Agreement, Jan. 2, 1988, U.S.-Can., 27 I.L.M. 293 [hereinafter FTA].

52. GATT, *supra* note 8, 61 Stat. at All, 55 U.N.T.S. at 194-96.

53. *Id.* art. III, 61 Stat. at A19, 55 U.N.T.S. at 204-08.

54. See, e.g., Alex Hittle, *Trade and the Environment at an Impasse*, ENVTL. F., July-Aug. 1992, at 26, 26.

55. See, e.g., *infra* notes 56-62.

agreements is a slow and cumbersome process, and each sovereign nation may decide whether to adhere to them. The great differences among nations produce acute conflicts of interest that impede agreement. Substantial progress has nonetheless been made in reaching or developing multilateral agreements dealing with endangered species,⁵⁶ chemical testing and labeling,⁵⁷ the development of Antarctica,⁵⁸ hazardous waste treatment,⁵⁹ depletion of stratospheric ozone due to emissions of CFCs and other chemicals,⁶⁰ global warming,⁶¹ and biological diversity.⁶² It is noteworthy that these agreements have not been focused on one particular type of externality, such as product risks, but encompass many different types of environmental problems. In addition, the North American Free Trade Agreement (NAFTA) has set an important precedent by specifically addressing environmental issues in the context of a regional trade liberalization agreement.⁶³

Even when agreements have been reached, there remains the problem of nonsignatories who seek to free-ride on others' efforts to preserve common resources or reduce pollution spillovers. Monitoring, implementation, and enforcement are also serious problems, as environmental groups have pointed out in the debate over the environmental aspects of the proposed NAFTA pact with Mexico.⁶⁴ There is no supranational environmental police or regulatory authority. Reliance must be placed on information exchange, scientific and public opinion, moral suasion, and the implicit threat that sanctions, such as trade restrictions, and side benefits, such as aid, will be imposed on or withheld from those who do not comply.⁶⁵

The development of international agreements to protect the environment has been fostered by the rise of international and regional scientific and cooperative intergovernmental organizations (IGOs) and nongovernmental organizations (NGOs) that have generated information about international

56. See, e.g., Convention on International Trade in Endangered Species of Wild Fauna and Flora, Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243 [hereinafter CITES].

57. See, e.g., *OECD Principles of Good Laboratory Practice*, OECD Doc. ENV/CHEM/HLM/80.1 (Apr. 11, 1980), reprinted in 19 I.L.M. 1057.

58. See, e.g., Convention on the Regulation of Antarctic Mineral Resource Activities, June 2, 1988, 27 I.L.M. 868.

59. See, e.g., Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, Mar. 22, 1989, 28 I.L.M. 657 [hereinafter Basel Convention].

60. See, e.g., Montreal Protocol on Substances that Deplete The Ozone Layer, Sept. 16, 1987, 26 I.L.M. 1550, amended and adjusted 30 I.L.M. 539 (1991) [hereinafter Montreal Protocol].

61. See, e.g., United Nations Conference on Environment and Development: Framework Convention on Climate Change, May 9, 1992, 31 I.L.M. 899.

62. See, e.g., Convention on Biological Diversity, May 22, 1992, 31 I.L.M. 822.

63. See GARY C. HUFBAUER & JEFFREY J. SCHOTT, NORTH AMERICAN FREE TRADE: ISSUES AND RECOMMENDATIONS 131-53 (1992).

64. See J. Ward, Environmental Enforcement: Unfinished Business in North American Trade, Testimony of the Natural Resources Defense Council Before the Senate Finance Committee Subcommittee on International Trade (Sept. 16, 1992).

65. See generally BARRY E. CARTER, INTERNATIONAL ECONOMIC SANCTIONS: IMPROVING THE HAPHAZARD U.S. LEGAL REGIME (1988).

environmental issues and encouraged the adoption of cooperative measures to deal with them. Some of these IGOs, such as the United Nations Environment Programme (UNEP), the United Nations Conference on Environment and Development (UNCED), and the Council of Europe, have served as a forum for the negotiation of international agreements and for monitoring their implementation.⁶⁶

Given the dearth of international authority to adjudicate environmental controversies, the slow pace of negotiating international agreements, and the problems of implementing and enforcing these agreements, it is not surprising that some nations, prodded by environmental groups, have favored unilateral national action to deal with environmental externalities. These measures include restrictions on both the export and import of assertedly hazardous products, wastes, and natural resources. Attention, particularly in the United States, has also focused on the possibility of prohibiting or taxing product imports, not on the ground that the product itself is risky, but on the ground that the process is not adequately regulated by the nation exporting the product.⁶⁷ In some instances trade restrictive measures aimed at assertedly inadequate environmental regulation by non-signatories have been authorized by international agreements. In other instances no effective international agreement has been completed on the subject and the restriction is imposed unilaterally.

In federal-type systems, unilateral adoption by a sufficiently powerful state of stringent product standards that disadvantage out-of-state producers has sometimes had the effect of stimulating legislation to adopt a uniform rule on the subject in order to reestablish a regulatory "level playing field" for competition. This pattern has been particularly marked in the European Community.⁶⁸ To take a recent example, Germany's adoption of a strong packaging recycling law has sparked proposals by other member states and the Commission for Community for legislation on the subject. Member states or industries disadvantaged by another member state's unilateral adoption of product regulations that have the effect of restricting trade have the option of challenging them in court, but litigation is slow, and

66. Other relevant institutional actors include international financial institutions, such as the World Bank, the European Bank for Reconstruction and Development, and the other multilateral development banks, which have, as the result of pressure from environmental groups and some member governments, especially the United States, begun to examine the environmental consequences of projects that they fund. In some instances projects have been cancelled or modified because of environmental concerns. Attention is now beginning to reach beyond project-by-project environmental assessment to efforts to develop the environmental legal and administrative infrastructure of the less developed countries and the nations of Eastern Europe and the former Soviet Union. The lack of legal and administrative capacities in such nations is a major barrier to effective environmental protection.

67. The United States Environmental Protection Agency is also taking steps to elicit a commitment by U.S.-based multinationals to assure adherence to U.S. environmental standards and compliance practices at facilities located abroad.

68. See *supra* note 21.

the Court of Justice has shown marked sympathy for environmental regulation.⁶⁹

It is far more difficult to adopt effective regulatory law in the international rather than in the federal-type context. This difference has been thought to justify unilateral action to protect the environment in a world where law is thin. But, such actions may be challenged by other nations as violative of the GATT. The very difficulty of obtaining harmonized measures through international treaties will encourage such challenges. Such challenges not only raise the validity of such trade-restraining measures under the provisions of the GATT agreement, but present larger issues about the appropriate role of trade restrictions in promoting environmental protection goals in the international context, and whether the GATT is the appropriate forum for resolving asserted conflicts between trade and the environment.

The experience in both the United States and the European Community in dealing with asserted conflicts between state regulation and free trade has been one of reliance on dispute resolution institutions—the Supreme Court and the Court of Justice—whose initial and primary mission was to nurture and protect a common market based on free trade. With the rise of environment, health, and safety regulations by member states, these tribunals had necessarily to consider how such measures might be reconciled with a FTR. It is fair to say that both the Supreme Court and the Court of Justice have appreciated the force of environmental and other regulatory objectives and done a generally skillful job of accommodating them and the FTR.

Controversy surrounding a GATT panel decision invalidating an environmentally-related U.S. law on tuna imports, and the heightened salience of trade and environment issues generally, has led GATT to issue a report on Trade and the Environment.⁷⁰ Its tone is disappointingly defensive and doctrinaire, reinforcing environmentalists' antipathy to GATT. The GATT itself fails to squarely address environmental issues, or the reconciliation of environmental protection with a FTR. Nonetheless, there is no reason in principle why GATT should not be capable of an evolution similar to that of the Supreme Court and the Court of Justice, notwithstanding GATT's very different character. And while the provisions in the GATT governing trade and environmental issues are sparse and unspecific, they are far more ample than the Commerce Clause and scarcely less delphic than the original Treaty of Rome. While amendments to the GATT to deal more specifically with trade and environment issues may well be desirable, the current GATT text provides sufficient flexibility to afford environmental values equal footing with free trade values.

69. See Case 302/86, *Commission v. Denmark (Re Disposable Cases of Beer)*, 1988 E.C.R. 4607, 1 C.M.L.R. 619 (1989) (upholding, in major part, Denmark's requirement for recycling beverage containers despite adverse competitive effect on German beer companies); Case C-2/90, *Commission v. Belgium* (July 9, 1992); *Waste Imports*, *supra* note 31.

70. See generally GENERAL AGREEMENT ON TARIFFS AND TRADE SECRETARIAT, TRADE AND THE ENVIRONMENT (1992) [hereinafter GATT SECRETARIAT].

GATT will be especially likely to develop an environmental orientation if it fears a loss of jurisdiction to other international organizations such as UNEP or UNCED. Environmentalists have threatened such a transfer of jurisdiction. But rationalization of the trade and environment interface would be far more difficult for an institution created to deal with environmental matters than one created to deal primarily with trade matters. It is important for the success of the FTR that there be consistency in the principles governing the relation between trade and different systems of national and international social and economic regulation. If there should be a separate trade and regulatory regime for environmental issues under the aegis of an international environmental agency, then the same approach could logically be applied in labor, consumer protection, antitrust, and other fields, producing a balkanization of the principles governing trade. This strategy would be comparable to transferring decisions about the validity of state regulations governing the common market from the United States Supreme Court or the Court of Justice to specialized administrative agencies in Washington or Brussels. This is not to say that free trade concerns should trump environmental or other social regulatory issues. However, an international tribunal rooted in the global trade regime has a better chance to harmonize trade and social regulatory concerns than a plethora of tribunals with special regulatory missions. Moreover, as a practical matter, there is no prospect that the Organisation for Economic Co-operation and Development (OECD) nations would agree to transfer adjudicatory responsibility from the GATT or authorities established by bilateral or regional free trade regimes to institutions such as UNEP. If the GATT did not exist, something like it would have to be invented to deal with the problems created by environmentally-related trade restrictions.

GATT is a highly imperfect institution. Its stature as a dispute-resolving tribunal falls far short of the Supreme Court or the Court of Justice. There is an urgent need to make its decisional processes more transparent and accessible.⁷¹ For analytic purposes, the discussion that follows disregards GATT's limitations and asks what principles or tribunals established under regional trade agreements such as the NAFTA ought to apply to controversies over environmentally-related trade restrictions, assuming it had binding adjudicatory authority. This assumption is later relaxed to consider briefly how such principles might be developed in the present, confused "third best" world of international institutions.⁷²

IV. PRINCIPLES OF GOVERNANCE FOR TRADE-RELATED ENVIRONMENTAL REGULATION IN THE INTERNATIONAL SETTING

What considerations, then, should guide determination by GATT or its equivalent of the validity of national measures with asserted environmental

71. See John H. Jackson, *World Trade Rules and Environmental Policies: Congruence or Conflict?*, 49 WASH. & LEE L. REV. 1227 (1992).

72. See *infra* notes 108-21.

justifications that restrict trade? It is essential, first, to distinguish between trade-restrictive measures undertaken unilaterally by a nation and those taken pursuant to an international convention. It is also essential to distinguish between the different types of environmental externalities addressed by a given measure.

A. Unilateral Measures

Products—Consider first, unilateral restrictions on product imports based on regulations designed to prevent environmental, health, and safety risks in the importing nation. The issues presented in assessing the justifications for such regulations, their competitive impact, and the appropriate balance between free trade and regulatory restrictions on products are very similar to those presented in a federal-type systems. In principle, there appears to be no reason why a GATT-type tribunal should not be able to evolve a satisfactory body of international law to govern the subject. In practice, however, trade rivalries are likely to be sharper, and the difficulty of resolving controversy over the scientific analysis of risk and appropriate risk management policies greater, in the international context than in a federal-type system. United States-European Community disputes over EC exclusion of meat from U.S. cattle which have received bovine growth hormone (BGH) and U.S. exclusion of EC wine with trace pesticide residues illustrate how contentious issues of science and risk management can be. Science often tells us that the level of risk is highly uncertain. Also, differences in risk management approaches cannot be dissolved by appeals to “sound science.”

The dispute between the United States and Canada over Canada's heavy tax on nonusable beer containers also illustrates the difficulty of evaluating the extent of environmental justification for measures that have the effect of protecting domestic producers.⁷³ U.S. environmentalists are fearful that the GATT and other free trade agreements will result in wholesale invalidation of U.S. product regulations, such as those aimed at pesticide residues.⁷⁴ While some U.S. regulation, such as the zero-tolerance standard for carcinogens imposed by the Delaney Amendment,⁷⁵ might be suspect, knowledgeable observers believe that the GATT standards are substantially more

73. See Dunne & Simon, *supra* note 16, at 5. The tax on nonusable beer containers has a protectionist effect because U.S. importers must either return empty containers to the United States, thereby incurring extra transportation and handling costs, or establish recycling facilities in Canada, where their sales volume is less than Canadian producers and they are unable to realize full scale economies. The European Court of Justice sustained a similar Danish recycling regulation despite its adverse impact on German brewers. See *supra* note 69.

74. See *GATT Language Would Undermine FIFRA, Other Environmental Laws, Group Says*, Int'l Trade Rep. (BNA), at 62 (Jan. 8, 1992); *GATT Threatens to Preempt States' Rights to Make Policy, Annual Meeting of NCSL Told*, Int'l Trade Rep. (BNA), at 1349 (Aug. 5, 1992).

75. See 21 U.S.C. § 348(c) (1988) (enabling Secretary to establish tolerance limitation).

deferential to national regulation than those applied by the United States Supreme Court and the Court of Justice to state regulation.⁷⁶

Restriction of product exports such as pesticides and other chemicals or products banned from use in the country of manufacture has been a controversial issue in international environmental policy for which there is no precedent in federal-type systems. In principle, at least, there is no reason why a pesticide banned in a nation with a developed economy and a vulnerable ecosystem might nonetheless, in some cases, appropriately be used in a less developed country with greater assimilative capacity.⁷⁷ In practice, however, there is grave doubt over the ability of the governments of many less developed countries (LDCs) to make and enforce appropriate judgments about risk because of inexperience, limited administrative capability, corruption, and other factors that make regimes unduly beholden to development interests. Outright bans on exports from developed countries have been urged by environmental groups, but the developed countries have generally instead required some form of advance notice and consent by the importing country. From the viewpoint of traditional FTR conceptions, a flat ban on manufacture of a chemical would not be problematic, because nations have not been thought to be obliged to produce specific goods and services even though they might be beneficial articles of international commerce. Under a "greater includes the lesser" analysis, it is hard to see how restrictions or conditions on exports, if applied in an even-handed fashion, would be any more subversive of the FTR than an outright ban. In practice, efforts have been made to ensure that notification and prior consent procedures are structured so as not to offend the letter of the GATT's requirements.

Natural Resources—Some nations have sought to impose restrictions on the export of natural resources designed to favor in-state consumption or processing. For example, the United States banned the export of Alaska oil to Japan, and some nations have restricted the export of unprocessed timber. Such restrictions are clearly inconsistent with FTR principles as developed in federal-type systems; so are dual price tariff systems—for example, a much higher tariff on imports of processed than on unprocessed timber—designed to favor processing within the importing state. Efforts to subsidize in-state producers are objectionable on environmental as well as economic grounds because they often encourage wasteful over-exploitation of the resource. Principles of state sovereignty are, however, more strongly held with respect to resources than products, and there is sentiment that natural resources stand on a different footing than manufactured products. But this sentiment, as the United States Supreme Court has recognized, can not be squared with a FTR. Nor is it required by considerations of environmental policy. Restricting exploitation of natural resources to nationals does not

76. See Jackson, *supra* note 71, at 1235-39.

77. Of course, it does not follow that just because a nation is less developed that its environment is less susceptible to environmental degradation.

ensure their wise maintenance. In many LDCs, infusions of foreign capital, technology, and know-how, combined with the development of improved property-right incentives, will be needed in order to maintain the resource base and promote sustainable development.⁷⁸ GATT disapproval of natural resource autarky, coupled with the development by international environmental and financial organizations of supporting measures to promote wise resource management, is likely to be the path of progress.⁷⁹

Wastes—The analysis with respect to wastes is similar to that for natural resources. In the international, as in the federal-type context, a ban on imports of out-of-state wastes offends FTR principles and is also unsound from a long-run environmental perspective. There are economies of scale and specialization in waste handling, treatment, and disposal. Also, some land disposal is inevitable for the foreseeable future, and different nations are better or less well equipped depending on geology, population density, and other factors, to provide appropriate disposal. Although risks associated with transportation of hazardous wastes must also be considered, a rule requiring each nation to dispose entirely of its own waste would not be economically or environmentally sound. Illegal waste transport and disposal have made a mockery of international efforts to prohibit all toxic and radioactive waste imports.⁸⁰ On the other hand, legitimate concerns remain about the capability of less developed nations to effectively regulate disposal of imported wastes. These concerns justify requirements like those in the Basel Convention for notification and prior consent and for ultimate exporting state responsibility for proper disposal.⁸¹ Such requirements alone are, however, unlikely to prevent illegal, corrupt, or improper waste transport and disposal. There is also a need for new international institutions to monitor waste shipment and disposal in accordance with standards and procedures established by international agreement.

Processes—Conceivably a nation might forbid the export of technology to nations who would use it as part of environmentally destructive production processes. Bans on pesticide exports could be understood in such terms, but no more general practice has yet emerged. Restrictions on product imports aimed at adverse environmental effects associated with the processes by which those products are produced present difficult issues, which have become a storm center of controversy following a GATT panel's decision invalidating U.S. prohibitions on the import of tuna caught through fishing

78. Considerations of maintaining the resource base and promoting sustainable development counsel against flat bans by importing states of products harvested without proper management of the natural resource base. See *infra* notes 93-97.

79. Differential importing state taxation of unprocessed and processed natural resources should be scrutinized in accordance with the general principles governing state taxation developed in federal-type systems such as the United States and the European Community.

80. See ELLI LOUKA, *THE TRANSNATIONAL MANAGEMENT OF HAZARDOUS AND RADIOACTIVE WASTES* (1992). A ban on waste imports can greatly increase the costs of disposal in some nations, creating added pressure for illegal disposal.

81. Basel Convention, *supra* note 59, at 664.

practices that cause the incidental taking of porpoise in greater numbers than allowed by U.S. law.⁸² Other examples include existing or proposed bans on imports of tropical hardwood timber, Canadian sealskin and Canadian lobster.⁸³ Many of these prohibitions have been imposed by the United States, which has also asserted unilateral authority to ban imports of product X from a country because of opposition to the process by which that country produces an unrelated product Y. Examples include threatened prohibition of imports of fish products and pearls from Japan because of opposition to Japanese whaling practices and imports of tortoise shell products respectively.⁸⁴ There is also growing talk in the United States of imposing countervailing duties on imports of products manufactured through industrial processes that do not meet U.S. environmental standards, either on the grounds that the less stringent exporting state's environmental standards represent an export subsidy that is countervailable, or violate anti-dumping laws because the total social costs borne by consumers in the producing state, including pollution as well as ordinary product costs, are greater than the costs charged consumers in the importing state (ecodumping), or are a general form of unfair competition. These proposals would seek to tax the "embedded pollution" in product imports.

As previously noted, there is no precedent in federal-type systems for such measures. This circumstance may reflect a number of factors including the relatively recent rise of environmental concerns, the fact that process spillovers have been more readily addressed by legislation in the United States and the European Community than internationally, and the relatively limited leverage that a single state would exercise.⁸⁵ In analyzing the validity and wisdom of such measures in the absence of precedent, it is important to distinguish among the different types of environmental externalities generated by different process and regulatory practices in different nations.

82. General Agreement on Tariffs and Trade: Dispute Settlement Panel Report on United States Restrictions on Imports of Tuna, 30 I.L.M. 1594 (1991) [hereinafter Tuna/Dolphin Panel Report].

83. See, e.g., National Oceanic and Atmospheric Administration Ocean and Coastal Program Authorization Act of 1989 § 8, 16 U.S.C.A. § 1857(1)(J) (West Supp. 1992) (banning sales of small lobsters and lobsters bearing eggs in interstate commerce); Maura Dolan, *EPA Chief Rebuffed In Plea for Nature Treaty Changes*, L.A. TIMES, June 5, 1992, at A15 (discussing Malaysian opposition at Rio Summit to proposed ban on sale of tropical hardwoods); *Law Bars Trade in Small Lobsters*, BOSTON GLOBE, Dec. 13, 1989, at 42 (discussing restriction on small lobster sales in response to Canadian practices); Nicolaas Van Rijn, *Seal-Killing Opponent Backs Greeland Hunt*, TORONTO STAR, Feb. 22, 1992, at A9 (discussing European Community ban on harp seal furs and opposition to seal hunt off Canada's east coast).

84. See Keith Bradsher, *Sea Turtles Put New Friction in U.S.-Japan Trade Quarrels*, N.Y. TIMES, May 17, 1991, at A1; David E. Sanger, *Japan, Backing Down, Plans Ban on Rare Turtle Imports*, N.Y. TIMES, June 20, 1991, at D6.

85. See Stewart, *Pyramids of Sacrifice?*, *supra* note 40. Particularly in a 50-state system such as the United States, the economic power of all but a few states would be too small to exercise substantial leverage through an import ban or tax.

Competitiveness spillovers have been a particular focus of attention in the United States. Some assert that unless other nations adopt relatively stringent U.S. environmental standards, U.S. industry will suffer a serious competitive disadvantage, leading to "industrial flight," and job losses.⁸⁶ These assertions raise difficult and controversial issues. Most empirical studies by economists conclude that environmental regulatory costs are generally not a significant factor in industrial location decisions or trade performance.⁸⁷ But, there are clear examples of "industrial flight" in a few limited contexts—such as the relocation of furniture finishing operations from Los Angeles to Tijuana, Mexico.⁸⁸ In addition, there are indications of some displacement of pollution-intensive industry in the chemical sector from North America to Southeast Asia.⁸⁹ Even in the absence of significant relocation, U.S. industry may suffer some comparative competitive disadvantage, particularly if the calculus of costs includes not only capital outlays and operating costs incurred in order to comply with regulatory requirements, but also includes the invisible costs imposed by liability risk and regulatory constraints, delays and uncertainty, which are especially high in the U.S. legal and administrative system.⁹⁰ These costs are far greater for new products and processes than existing ones, and may cause long-term impairment of comparative advantage even without any relocation of existing capacity. On the other hand, environmental regulations may create some competitive advantages by encouraging the development of environmentally superior processes that can be sold in the export market or that improve efficiency in resource use.

Because of the difficulties in establishing the extent of competitive disadvantage that may result from a nation's adoption of more stringent

86. See Dennis Eckart, *Free Trade Shouldn't Mean Exporting Pollution*, ENVTL. F., July-Aug. 1992, at 24, 24. Eckart was a Congressman from Ohio.

87. For a review of the relevant literature, see Judith M. Dean, *Trade and the Environment: A Survey of the Literature*, in INTERNATIONAL TRADE AND THE ENVIRONMENT, *supra* note 1, at 15. Environmental regulatory outlays average less than .6% of production costs for U.S. industry as a whole, although particular industries have higher burdens; the maximum is just over 3% for the cement industry. See Patrick Low, *Trade Measures and Environmental Quality: The Implications for Mexico's Exports*, in INTERNATIONAL TRADE AND THE ENVIRONMENT, *supra* note 1, at 105. However, these figures do not fully reflect the adverse impacts of the legalistic U.S. regulatory system on investment and innovation. Developing countries have increased their relative share of higher-polluting "duty" industry, but this fact may be due to their stage of industrialization rather than laxer environmental standards. See Robert E. B. Lucas et al., *Economic Development, Environmental Regulation and the International Migration of Toxic Industrial Pollution: 1960-1988*, in INTERNATIONAL TRADE AND THE ENVIRONMENT, *supra* note 1, at 67; Patrick Low & Alexander Yeats, *Do "Duty" Industries Migrate*, in INTERNATIONAL TRADE AND THE ENVIRONMENT, *supra* note 1, at 89.

88. U.S. GENERAL ACCOUNTING OFFICE, REPORT ON THE FURNITURE FINISHING INDUSTRY; Chris Kraul, *A Warmer Climate for Furniture Makers*, L.A. TIMES, May 14, 1990, at D1.

89. See *The Allure of Southeast Asia's Chemical Market*, CHEMICAL WK., at 42 (discussing investment by chemical companies from United States and other countries in Southeast Asia).

90. Richard B. Stewart, *Regulation, Innovation, and Administrative Law: A Conceptual Framework*, 69 CAL. L. REV. 1259 (1981).

environmental regulation, disputes over the justification for import duties and other trade restrictions assertedly designed to offset such disadvantage will depend on who has the burden of proof. Given the clear potential for serious protectionist abuse of such measures, the burden of proving serious competitive disadvantage should rest with those who would restrict trade.⁹¹

There is, however, a more fundamental objection to such measures. As the opinion of the GATT panel in the tuna/dolphin case correctly observes, no reason exists why differences in environmental conditions and preferences among different nations and consequent differences in process regulations should not be regarded as an appropriate aspect of comparative advantage. The "level playing field" principle underlying proposals to equalize environmental compliance costs admits of no stopping point. It would equally apply to labor and wage policies, education policy, tax policy, and the entire array of government social and regulatory policies that affect production costs. In the contemporary world, any effort to distinguish "natural" advantages from those created by government policy is bootless. Equalizing all costs of production would produce a world without any trade at all. Moreover, problems of establishing cost differentials and allocations raise such intractable problems that unilateral tariffs or other measures assertedly designed to correct competitiveness differentials would in practice be extraordinarily arbitrary.

Of course it may be appropriate, from the viewpoint of advancing environmental protection, to encourage a degree of harmonization of process standards by agreement in order to obviate fear of a "race to the bottom." There is also justifiable concern that many LDCs may, because of governmental failings, fail to adopt and enforce adequate and appropriate process regulatory standards, even when their distinctive economic and environmental circumstances are taken into account. But this concern would not justify a developed nation B from unilaterally imposing trade restrictions in order to induce a less developed nation A to adopt B's standards. At best, A should adopt standards appropriate to its circumstances. But, for reasons previously noted,⁹² there is enormous indeterminacy in setting such standards. To allow B, an obviously self-interested party, to decide unilaterally what environmental standards are appropriate for A would invite grossly arbitrary decisions. International agreements on process standards, complemented by appropriate forms of financial, institutional, and technological assistance to LDCs, are the appropriate response to the "race to the bottom" concern. Unilateral process-based trade restrictions are unlikely in the long run to be effective in dealing either with the "race to the bottom" concerns or the special circumstances of LDCs.

Unilateral imposition of product bans in an effort to force nations to protect their natural resources and use them more wisely is also squarely

91. To the extent that comparative disadvantage is attributable to inefficiencies in a nation's choice of regulatory instruments or its legal and administrative system rather than higher environmental standards as such, the appropriate remedy is to reduce those inefficiencies.

92. See *supra* notes 72-75 and accompanying text.

inconsistent with the FTR and hard to justify on environmental grounds. Unwise management of natural resources may indeed diminish their use and nonuse value to citizens of other nations. But determining the extent of such losses is in practice an impossible task. Claims of impaired use values are based ultimately on a premise of institutional corruption or incompetence in the host nation and would be difficult and painful to resolve. Even if corruption or incompetence were established, how would one determine the amount of increased use value that the resources would provide if properly managed? Nonuse values are even more difficult to determine because there are generally no good market proxies for them; one must rely on highly controversial and as yet untested contingent valuation studies that generate a wildly broad range of values.⁹³ These uncertainties would make it practically impossible to determine the extent of any externalities involved and to devise proportionate corrective measures, such as countervailing tariffs. Product bans assertedly designed to prevent such externalities would be arbitrary at best and a handy pretext for protectionism. Using this analysis, the decision of the FTA panel upholding a United States ban on "undersized" lobster from Canadian waters⁹⁴ can not be sustained. Bans on resource imports may be counterproductive; by shutting off markets, they may undercut the economic incentives of exporting countries for appropriate resource management. Trade-based economic incentives, such as that negotiated by Merck and Costa Rica for preservation of biological diversity,⁹⁵ which rely on property-rights carrots rather than the unilateral stick of trade restrictions are likely to be a more effective means of promoting wise resource management.⁹⁶

Exploitation of Resources in the Global Commons—The matter stands somewhat differently, however, in the case of resources that are part of the commons, wholly outside any nation's territory. Examples include the oceans, Antarctica, and the stratosphere. For resources within national territory, the interests of the citizenry, reinforced by the prospect of trade

93. Contingent valuation studies seek to determine the monetary value that individuals place on nonuse resource values by asking a sample of persons hypothetical questions about how much they would be willing to pay to preserve a resource or how much they would demand in compensation for its degradation or destruction. See Cross, *supra* note 34; Richard B. Stewart, *Tort Liability for Natural Resource Damages: A Category Mistake* (forthcoming).

94. *Lobsters from Canada*, USA 89-1807-01, Final Report of the Panel, 1990 WL 299945 (Binational Panel May 25, 1990). The United States sought to defend the restriction on undersized lobsters as a resource preservation measure. An attempt to justify the ban as a corrective to unfair competition should, on the analysis previously developed, be equally unavailing. Canada-United States Free Trade Agreement Binational Secretariat: Background Note on the FTA Binational Secretariat and a Status Report of All Cases Filed with the Secretariat Under Chapters 18 and 19, Jan. 30, 1991, 30 I.L.M. 181, 189.

95. See sources cited *infra* note 96.

96. Graeme Browning, *Biodiversity Battle*, NAT'L L.J., Aug. 8, 1992, at 1827; Julia Preston, *A Biodiversity Pact with a Premium: U.S. Fears Rio Treaty Would Threaten Kindred Concessions in Future*, WASH. POST, June 9, 1992, at A16; Michael Unger, *Firms Say Rio Treaty Strikes at Heart of Biotech Industry*, NEWSDAY, June 14, 1992, at 73.

(including tourism), provide at least some incentives for the establishment of systems of property rights and regulation to protect the resource. In addition, important considerations of national sovereignty cut strongly against the unilateral use by other nations of trade restrictions to induce the host nation to adopt more protective environmental measures domestically. Both of these considerations are absent in the case of the resources of the ocean and Antarctica.⁹⁷ Without an international agreement, there is no system of property rights or regulation protecting resources such as whales or stratospheric ozone. All too often, the result is a textbook example of the tragedy of the global commons. An unregulated regime of free trade will simply hasten the tragedy rather than advance the common welfare. In these circumstances, it is far easier to justify restrictions on products from other nations that have been produced through means that destroy the commons resource base. Use by nations of self-help to preserve that resource base is, in principle, a fair response to those who would use self-help to destroy it. But, this principle does not provide *carte blanche* for trade restrictions. Such restrictions must, as in the context of restrictions on product imports based on the risks posed by the products themselves, advance environmental rather than protectionist goals and do so through means whose adverse effects on trade are not unduly disproportionate to the environmental benefits obtained.

Using this analysis, the GATT panel in the tuna/dolphin case⁹⁸ may well have reached the correct result, but for the wrong reasons.⁹⁹ This now-celebrated case involved a U.S. ban on imports of tuna caught by Mexican fishing boats on the high seas through practices that resulted in an incidental take of dolphin in greater numbers than that allowed by U.S. law.¹⁰⁰ The basic rationale of the panel decision was that the FTR would be seriously undermined by restrictions on trade in products that were not based on the environmental risks posed by the products themselves but by the process by which they were produced, and that GATT Articles XX(b) and XX(g) should, therefore, be interpreted with the rest of the GATT to require a total ban on process-based product import restrictions.¹⁰¹ The recent GATT Secretariat Report on Trade and the Environment strongly defended this reasoning, asserting that “[i]f the door were opened to use trade policies unilaterally to offset the competitiveness effects of different environmental standards, or to attempt to force other countries to adopt domestically-favoured practices and policies, the trading system would start down a very slippery slope.”¹⁰² The Report also raised the spectre that if countries were

97. A nation may, however, protest process-based product restrictions as extraterritorial regulation of its citizens' actions by another nation.

98. Tuna/Dolphin Panel Report, *supra* note 82.

99. I am grateful to my former student, Jeffrey Dunoff, now Assistant Professor of Law at Temple University School of Law, for this insight.

100. Tuna/Dolphin Panel Report, *supra* note 82.

101. *Id.* paras. 5.24-.34, at 1619-21.

102. GATT SECRETARIAT, *supra* note 70, at 6.

free to impose unilateral restrictions on trade in the name of process-related environmental concerns, the world would "risk an eventual descent into chaotic trade conditions similar to those that plagued the 1930s."¹⁰³

As noted, this position has considerable force where the environmental harm done by the process is internal to the nation where it occurs. Quite different considerations apply to exploitation of the commons.¹⁰⁴ The U.S. tuna ban was nonetheless suspect under a proportionality test. No showing was made that the porpoise species in the area were endangered or had fallen below sustainable levels, or that they were in greater danger than porpoise in other areas, fished intensively by U.S. boats, where the regulation did not apply. Nor was there evidence that the incidental take quota established by U.S. law had any rational relation to resource preservation. Moreover, the incidental take rate for non-U.S. boats was a regulatory "moving target," constantly adjusted in relation to the performance of the U.S. fleet, making compliance by non-U.S. boats more difficult. Although the U.S. fleet was subject to a somewhat more stringent incidental take restriction, the regulation applied to an area of the Pacific where there were only a few U.S. boats and far more Mexican ones.¹⁰⁵ Given these facts, the panel could reasonably have concluded that the protectionist aspects of the measure and its limited environmental justification were sufficient to condemn it under the standard traditionally applied in product regulatory disputes in federal-type systems such as the United States or the European Community.¹⁰⁶

This test would also rule out a ban on imports from a given nation of one product (such as Japanese pearls) because of opposition to the environmental consequences of harvesting entirely unrelated resources (such as hawksbill sea turtles). The threatened U.S. ban on imports of Japanese products was aimed, not at the harvesting of turtles by Japan, but at Japan's import of turtle products from others. It was thus the environmental equivalent of a secondary boycott. The threat, and resultant publicity, helped lead the Japanese to agree to phase out such imports. But these occasional instances of success in the tactical use of product boycotts does not show that they are a sound general response to issues of trade and environment.

Process-Based Pollution Spillovers—Still different considerations are raised by import product bans aimed at the pollution generated by the

103. *Id.* at 20.

104. While some of the fish caught may have been processed in Mexico, the environmental effects of concern occurred on the high seas. In other instances the fish were processed in third countries; imports to the United States from these countries were also banned.

105. This circumstance may, however, reflect the fact that the U.S. fleet had already been subjected to incidental take restrictions.

106. The panel decision has not, however, been appealed to the GATT Council, and Mexico is taking steps to comply with the U.S. law. It is doing so in order to allay concerns of U.S. environmentalists and thereby enhance the likelihood that the United States will ratify the NAFTA.

processes of their production, where such pollution causes or threatens significant environmental harm in the importing state.¹⁰⁷ Examples might include regional ozone transport or acid deposition, depletion of stratospheric ozone through CFC and halon emissions,¹⁰⁸ and global climate change resulting from GHG emissions. In this instance a product ban could be understood as a form of self-help against deliberate injury. Alternatively, the injured importing state might impose a tariff based on the additional production costs that the exporting state would have to incur in order to prevent the injury, although as a practical matter this would be very difficult to determine. Given the lack of other remedies available under international law, such forms of self-help do not seem objectionable in principle, but there are very significant problems in ensuring that such measures are justified by the end asserted—prevention of serious environmental injury—and not exercised in a protectionist or otherwise arbitrary fashion. These problems raise questions such as how serious is the pollution spillover? Would the restriction be effective in preventing it? Are the preventive requirements that it would impose on the polluting country reasonable, judged in light of the importing nation's practices and those of other nations? What competitive advantage would a ban or tariff give to domestic manufacturers? Is there evidence that the measure is aimed at economic rather than pollution spillovers? Is the environmental benefit to the importing nation reasonably proportionate to the trade detriments imposed? It would not appear beyond the competence of a specialized tribunal to work out a satisfactory resolution of these matters. In addition, there is the problem of distinguishing transboundary physical spillovers from those that are merely local. Many environmentalists believe that everything is connected to everything else, but in a regime of sovereign states, distinctions of degree, if not of kind, must be recognized. The standards for upholding product import restrictions assertedly aimed at pollution spillovers should be reasonably demanding in order to rule out the dangers of arbitrary or protectionist actions, and might only be met in the case of regional pollution spillovers causing serious current injury.

One may object that the foregoing analysis, framed as it is in terms of externalities, entirely misses the possibility that trade restrictions might be based on moral principles. The citizens of B may object in principle to the

107. Product import restrictions based on the environmental effects of the processes used to make such products must be distinguished from regulations that require inspection of manufacturing processes to ensure that the product made is safe. It is, for example, common for a nation, A, importing food or drugs from another nation, B, to insist on inspecting B's manufacturing plants or on B showing satisfactory evidence of the use of good manufacturing practices. In many instances it is very difficult to assess the safety of each product, and far more convenient to ensure that the manufacturing process has sufficient quality assurances. Pep Fuller, Remarks at the Washington & Lee University Symposium on Trade and the Environment (Sept. 25, 1992).

108. Stratospheric ozone depletion, however, is a mixed case because a large proportion of emissions comes from products incorporating CFCs.

adverse environmental effects resulting from A's production of product X and do not wish to participate in such environmental degradation by consuming X. Such a view is sincerely held by many people. It may, for example, explain the U.S. tuna/dolphin regulations. But, for reasons explained at the outset, this conception is not an appropriate basis for resolving international trade and environmental issues. If accepted, it would be a wild card impervious to assessments of efficacy and proportionality. If admitted as a justification for trade restrictions, almost any unilateral restraint on trade could be justified. People may sincerely have an aversion to eating beef from cattle that have ingested BGH, or to food produced by bioengineered organisms, even though there is no scientific evidence indicating that such products carry any special risk. This is not to say that moral principles can not play a legitimate role in the generous conception of human welfare that should underlay environmental and trade policy. But such an untethered assertion of moral justification does not command unblinking deference. At the very least, as developed further below, it should be reflected in an agreement by a substantial number of nations. Trade restrictions imposed pursuant to an international agreement may present quite different issues than restrictions imposed unilaterally by a single nation.¹⁰⁹

B. *Multilateral Restrictions*

An agreement among a group of some but not all nations establishes certain common environmental standards and practices for product risks and labels, natural resource management, waste management, or production processes. Trade sanctions are imposed against nonsignatories who fail to observe such standards. Such sanctions may or may not be explicitly authorized by the agreement. These circumstances should not automatically validate a trade restriction that would be invalid if imposed unilaterally. At the same time, they alter the framework for analysis and, potentially, its result.

In a federal-type system such group agreements rarely occur. If a substantial number of states want common measures to deal with an environmental problem, that interest is likely to be shared to some extent by those in other states because of basic similarities among states that are

109. A more difficult problem is presented by unilateral labelling requirements assertedly designed to inform consumers in the importing state of the environmental consequences of the product's production. In principle, there is nothing objectionable about such labelling, which should enhance consumer welfare. In practice, however, it is often extraordinarily difficult to provide such information in an accurate, concise, and nonmisleading fashion. Heavy-handed labelling requirements may lead consumers to boycott products that they would not boycott if they had complete information. The GATT panel that struck down the U.S. ban on imports of tuna based on incidental take of tuna nonetheless upheld a U.S. labelling requirement based on the concept of "dolphin-safe" tuna. Suppose the European Community required all imports of U.S. beef from cattle that had received BGH to be labelled: "Notice: This beef product is from cattle that were given chemicals to increase their weight"?

members of the same federal-type system. Accordingly, it will often be possible to enact common legislation to deal with the problem. There will, however, be regional conflicts of interest that will shape the compromises made in such legislation and may at times block legislation altogether, as was the case for a dozen years with legislation to deal with acid precipitation in the United States and is still the case with energy policies in the European Community. But in such situations the states desiring controls have apparently never considered the possibility of making a separate agreement and imposing restrictions or duties on product imports from nonsignatory states. The United States Constitution would require Congress to approve any such agreement as an interstate compact. In the Low Level Radioactive Waste Act, Congress sought to encourage the formation of regional compacts for establishment of a common waste disposal facility for the states parties to the compact.¹¹⁰ Congress did so by authorizing the signatory states to exclude wastes from nonsignatories.¹¹¹

In analyzing the validity in the international context of trade restrictions imposed pursuant to an agreement among some nations, one must again distinguish the different types of externalities that might be addressed by such measures. There is a strong common interest in harmonizing product regulatory standards, even in the midst of debate about what those standards should be, because different product regulatory standards reduce the welfare of all producers and consumers in the FTR. Work is proceeding under the auspices of GATT, OECD, and other international organizations to harmonize regulatory and labelling standards for chemicals. It would be more difficult to harmonize standards for other products, such as pesticides, automobiles, and biotechnology, because of differences among nations in the stage of economic development, assimilative capacity, and social attitudes toward risk. Environmentalists in nations with stringent product regulations fear that harmonization will mean a weakening of their standards. Uncertainties in risk analysis and differences in approaches to risk management also impede harmonization. Even when a group standard is agreed upon, it should not automatically be validated if its justification is challenged, and circumstances may exist where the nature and effect of the common standard and the identity of the group gives ground for suspicion of an attempt to exercise market power for competitive ends. But group standards should, *ceteris paribus*, enjoy greater deference than unilateral ones, and the deference should be greater if more rather than fewer nations have agreed to the common standard.

Agreements among nations to prohibit exports of environmentally risky products should also enjoy greater deference than unilateral measures. One

110. See Low-Level Radioactive Waste Policy Amendments Act of 1985, Pub. L. No. 99-240, 99 Stat. 1842 (codified at 42 U.S.C. §§ 2021b-2021j (1988)).

111. The Supreme Court, however, recently invalidated a key provision of the legislation, requiring states to take title to privately-generated wastes in order to induce them to develop adequate disposal capacity, concluding that the provision violated the Tenth Amendment. *New York v. United States*, 112 S. Ct. 2408 (1992).

reason why nations are reluctant to impose such restrictions is a fear that they will not protect the environment but simply benefit competitors in other nations who do not adopt such measures. Deference to common measures would help promote agreements that would ameliorate the problem of competitive disadvantage. And, while differences in nations' environments and their stage of development means that environmental standards should not necessarily be uniform, wide agreement by exporting nations on an export ban is unlikely to be reached, given competitive pressures, unless the product in question is unduly dangerous in nearly all contexts.

Common restrictions on natural resource exports may well constitute a mere cartel. Consider, for example, an OPEC restriction on output in the name of resource conservation. Such measures should enjoy even less deference than a unilateral ban, unless accompanied by significant common efforts at resource preservation and management. The participation of importing states in such agreements would help to show that environmental protection justifies the restrictions.

On the other hand, regional compacts for waste handling that exclude imports from nonsignatories should enjoy a sympathetic assessment. As already noted, considerations both of economics and ecology make regional solutions more desirable than a regime that requires each nation to dispose of all of its wastes internally. Experience with low-level radioactive waste in the United States suggests that the ability to exclude waste imports from nonparticipants in a regional plan for joint disposal arrangements is a critical incentive for the formation of joint waste management regimes. The Basel Convention follows a less ambitious approach, requiring signatories to exclude wastes from nations that do not adhere to the Convention's provisions for informed importing state consent and exporting state responsibility for environmentally sound disposal.¹¹²

The validity of an agreement by some nations to impose harmonized controls on production processes and to exclude products produced by nonsignatories that decline to adopt those controls should again depend on the type of externality in question. If the resulting environmental degradation is confined to the nonsignatory's territory, the exclusion should not generally be valid. Nations that have agreed to common process controls may well suffer a competitive disadvantage relative to those that have not agreed. Nonetheless, trade restrictions designed to eradicate comparative advantages stemming from differences in social and regulatory policies are inconsistent with the logic of the FTR and principles of national sovereignty. The fact that some nations agreeing to common controls have pooled their purchasing power to induce nonsignatories to adopt those same controls in no way alters this conclusion. Exclusions assertedly justified by the host nation's failure to manage its resources wisely, with resulting impairment of use and nonuse values for citizens of other nations, are too prone to arbitrary application and intrude too deeply on national sovereignty to be justified,

112. Basel Convention, *supra* note 59, art. 4, at 661-63.

especially given that there are carrots—in the form of various types of assistance and market-based incentives for resource preservation—that are a more appropriate and likely more effective means of satisfying transnational interests in resource preservation.¹¹³

International practice shows that trade in endangered species stands on a different footing than ordinary products or natural resources. For one thing, it is more difficult to distinguish product and process in the case of endangered species. The taking of a specimen creates an adverse environmental effect—diminution of an already endangered population—but the dead specimen itself embodies the adverse effect. Also, there is rarely any competitive or protectionist advantage that the nations imposing such a ban can achieve. Bans on trade in endangered species represent an attempt to impose the signatories' view of sound resource management on other nations. But if the signatories are sufficiently numerous and diverse, that is evidence that their view is not arbitrary. Trade bans such as the Convention on International Trade in Endangered Species (CITES) can be understood as based both on deontological principle—refusing to participate in species eradication—and the pragmatic ground of inducing changes in other nations' resource management practices so as to prevent such destruction. The premise that trade bans will promote conservation is sharply challenged by those who believe that sophisticated systems of property rights and related market incentives would be more effective in protecting endangered species. If it proves true that market-based property rights systems are more effective in protecting endangered species, reconsideration of trade bans would be in order.¹¹⁴ Would participation in such a market offend moral principles if the chances of species survival were thereby increased?

Multilateral restrictions on trade in products that means of production destroy the resources of the oceans, Antarctica, and other commons invite special deference. As previously agreed, even unilateral measures designed to promote wise commons management deserve respect. A fortiori, agreements among nations to the same end deserve deference. The identity of the signatories is relevant. Switzerland, unlike Japan, has no direct interest in whaling. But surely signatory nations may jointly agree to abstain from consumption of resources taken in violation of a joint regime to preserve commons resources, if they reap no disproportionate competitive advantage in doing so. The restriction is justified in part by a direct environmental goal—restricting consumption that would fuel destruction of common resources. And the restriction serves the related goal of reducing the competitive disadvantage imposed on industry in the signatory states. The more difficult question is the validity of a secondary boycott imposed on func-

113. A condition of such assistance might be that the host nation agree to prohibitions on exports of resources produced in violation of sound management practices and to corresponding import prohibitions by the donor nations.

114. See *Birds and Bees; Governments are Trying to Use Treaties to Prevent Extinction*, *ECONOMIST*, May 30, 1992, at 15.

tionally unrelated products—for example, a ban on Icelandic-produced fish if Iceland disregards the whaling convention.¹¹⁵

Pollution spillovers present another case for group boycotts of imports produced by processes that are not controlled in accordance with agreements enjoying a more or less wide international consensus. Such measures, if appropriately framed, not only protect common atmospheric or water resources and prevent competitive disadvantages that would otherwise be suffered by those that refrain from abuse of the commons, but are also a form of self-help against infliction of harm. The broader the international consensus on appropriate controls, the less the danger that they are being deployed for protectionist or other arbitrary ends. Some environmentalists, again believing literally that everything on earth is connected to everything else, would seek to justify all process-based boycotts as preventing spillovers. But, as in U.S. cases in which environmental regulation is challenged as a “taking” of property, as opposed to nuisance-based restrictions designed to prevent adverse impacts on third parties, a line must be drawn between significant physical spillovers and those that are physically insubstantial or based on nonuse values.¹¹⁶

The Montreal Protocol exemplifies the use of trade restrictions against nonsignatories to agreements regulating production processes in order to prevent significant pollution spillovers that would both injure the commons and the health and welfare of the signatory nations' inhabitants.¹¹⁷ Such restrictions deny markets that would fuel such spillovers,¹¹⁸ and discourage nonsignatories from free-riding on the efforts of the signatories. The broader the ambit of such spillovers and the greater the number and the more diverse the signatory nations, the greater the deference such agreements should command. There nonetheless remains room for inquiry into the extent of environmental justification for the restrictions. There would be other ways of limiting consumption in the participating nations—such as auctioning a limited quota of sale rights—without excluding products from nonsignatory nations. To this extent, the exclusion can be viewed as a protectionist measure aimed at economic spillovers and competitive advantage. On the other hand, the exclusion can be viewed as an appropriate response to those seeking to free ride on the signatories' joint effort. Whether they are indeed free-riding, however, depends on what their appropriate responsibility for responding to a common problem should be. The mere fact that another nation has not adopted the standards or practices

115. Also, as the Law of the Sea negotiations reflect, sharp differences may exist among nations as to what form of regulation or property rights should govern the commons.

116. *See, e.g., Florida Rock Indus. v. United States*, 21 Cl. Ct. 161 (1990).

117. Montreal Protocol, *supra* note 60.

118. Where agricultural or other use of exported products, such as chemical pesticides, in other nations threatens the health or environment of nations that export such chemicals but also import agricultural or other products produced by the use elsewhere of such chemicals (the so-called “circle of poison”), the justifications for multilateral agreements to ban exports of such products is similar.

agreed to by a certain group of nations does not by itself establish free-riding. Measures to restrict GHGs to deal with the threat of global warming provide a difficult case in point.

Suppose that the European Community, in the name of combatting global warming, agrees to curtail fossil-fuel carbon dioxide (CO₂) emissions from production processes and adopts (a) a ban on imports of products produced by processes with CO₂ emissions greater than that permitted by EC standards, or (b) a tariff on imports of such products in an amount assertedly equal to the cost differential advantage enjoyed by the noncomplying producers. The United States protests that the threat of global warming is speculative; that the focus on CO₂ alone, rather than all GHG sources and sinks, is arbitrary from an ecological and economic perspective, and that the measure is designed to impose, through joint trade restrictions, competitive disadvantage on the United States, which has relatively more abundant fossil fuels, vaster distances across which people and goods must be transported, and climates that are both colder and hotter than those generally experienced in the EC. The EC rejoins that global warming is likely to occur, with potentially serious adverse effects, unless GHG emissions are substantially reduced, and that fossil-fuel CO₂ is by far the most significant GHG and the one that can be most reliably controlled.

A transnational dispute resolution authority responsible for determining whether an EC trade ban against products from fossil fuel CO₂ sources was compatible with global welfare in the context of an environmentally responsive FTR would have to evaluate the scientific evidence regarding the extent of global climate change in the absence of controls, the adverse effects should it occur, the practical justifications for controls limited to CO₂ emissions from fossil fuels, rather than all GHGs, their sources and sinks, and the extent to which such restrictions could be explained as a trade boycott aimed at securing competitive advantage. The relevant authority would also be required to evaluate whether less restrictive alternatives, such as a comprehensive approach aimed at all GHGs, sources, and sinks, would sufficiently promote the asserted objective. If a tariff were adopted, the authority would have to enquire whether the level at which it was set was arbitrary.

In the tuna/dolphin case, the GATT Panel interpreted the GATT as imposing a flat ban on process-based product restrictions. This reading was not required by the text of the GATT.¹¹⁹ Nor was it justified by a "slippery

119. Article XX(b) provides an exception from the GATT's general prohibitions against export restrictions for measures "necessary to protect human, animal or plant life or health," and Article XX(g) provides an exception for measures "relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption." GATT, *supra* note 8, art. XX(b), 61 Stat. at A61, 55 U.N.T.S. at 262. Neither provision resolves the question of whether or not the measures excepted include those aimed at imported products created by processes that harm the environment. Nor does Article III, which prohibits the application of national regulations to imported or domestic products for the purpose of protecting domestic production, resolve this issue.

slope" fear that to allow any process-based restrictions of product trade would open the floodgates to intolerable abuse. Tribunals in federal-type systems have proved capable of judging contextually the justifications for regulatory restrictions on trade without invoking such rigid categorical distinctions. True, they have not had to face process-based restrictions, which pose more imponderables than product-based restrictions, in large part because uniform federal-type regulation of processes is far more readily available than it is in the international context. Moreover, GATT or other international tribunals are far less institutionally secure and must be more respectful of state sovereignty. These considerations counsel a heavy but not insurmountable burden of justification for multilateral trade restrictions designed to enforce process controls on nonsignatories whose processes generate significant harmful pollution spillovers.

As previously noted, the GATT is not a well-established, highly respected tribunal like the Supreme Court or the Court of Justice. In its current situation, it may not have the institutional capacity to win assent to all of the principles developed above. Also, the number of disputes brought to GATT tribunals has been too small to develop sufficient precedent sufficiently quickly to guide the fast-moving trade and environment field. The Council appeal process further muddies the precedential weight of GATT decisions. On the other hand, a growing number of international agreements focus on trade—for example the Basel Convention.¹²⁰ Other agreements, such as the Montreal Protocol, authorize trade sanctions.¹²¹ The number of environmentally related disputes brought before GATT and other tribunals created by regional free trade agreements will likely increase. But the international legislative and adjudicative process is inevitably rather slow, cumbersome, and ad hoc. An institutional transition to a more integrated system is necessary, but will necessarily proceed deliberately and experimentally. For reasons noted previously, resolution of environmentally-related trade disputes should remain with GATT tribunals or tribunals established by regional agreements such as the FTA or NAFTA.¹²² But other means of harmonizing trade and environmental regulation are needed. GATT can participate in this process, as it has through the effort to develop common sanitary and phytosanitary standards and through the GATT working party on domestically prohibited goods. Industry, particularly in the United States, has been suspicious of proposals for "greening" GATT.¹²³ But the growing concern for relative competitive advantage, and the fact that U.S. industry operates under the world's most burdensome environmental regulatory system, may make industry more willing to consider using the trade regime to harmonize environmental regulatory standards. UNEP, UNCED, OECD,

120. See Basel Convention, *supra* note 59.

121. See Montreal Protocol, *supra* note 60.

122. See FTA, *supra* note 51; North American Free Trade Agreement, Sept. 6, 1992, U.S.-Can.-Mex., available in LEXIS, GENFED-EXTRA Database; WL, NAFTA Database (awaiting ratification as this article went to press).

123. Bruce Stokes, *Greens Talk Trade*, 23 NAT'L J. 862 (1991).

and other IGOs must also be involved. As harmonization proceeds, one of the most difficult problems will be dealing with insistence by some nations, such as the United States, either that harmonized standards are no less stringent than their domestic standards, or that they retain the freedom to impose more restrictive standards and enforce those restrictions through trade sanctions. Moreover, nations with strong environmental regulatory programs may seek to justify unilateral imposition of environmentally-related trade restrictions as a necessary means of prodding other nations to agree to adequate multilateral standards.

C. Market-Based Regulatory Instruments

Thus far the analysis has focused on the use of command and control regulations or tariffs to prevent environmental degradation. There are, however, incentives other than regulatory restrictions enforced by trade barriers or tariffs that can be used to deal with environmental externalities. Bilateral or multilateral governmental grants of aid and technology transfers, like those contemplated by the Agenda 21 principles adopted in Rio,¹²⁴ can be used to promote pollution prevention and wiser resource management by LDCs. Reliance on such tools alone, however, will not be sufficient, even if they are conditioned on adoption by donee nations of environmentally protective regulations together with suitable provisions for monitoring, enforcement, NGO participation, and ongoing scientific review.¹²⁵

At least in the case of activities that destroy commons resources or cause significant pollution spillovers, moral and pragmatic objections exist to using payments as a general inducement for nations to restrain from environmentally destructive practices.¹²⁶ The Montreal Protocol, however, provides for financial assistance from the developed nations to the LDCs to cover the costs of changing production processes to accommodate CFC substitutes.¹²⁷ This arrangement was vital in securing the assent of LDCs to the protocol. The fact that both CFCs and their substitutes were developed and marketed by developed country firms provides a potential distinction to limit the precedential effect of this arrangement. The Agenda 21 principles and the creation of a Global Environmental Facility within the World Bank reveal an increased willingness on the part of the developed countries to provide assistance to LDCs in order to promote environmentally sound development. Nonetheless, the extent of the transfers which developed countries will make are likely to be relatively small in relation to the magnitude of potential environmental protection in the LDCs. The total

124. See United Nations Conference on Environment and Development, June 3-14, 1992, 31 I.L.M. 814 (discussing contents and impact of Agenda 21).

125. Enforcement mechanisms might include donor nation restrictions on trade in products produced in violation of such restrictions.

126. See Karl Göran Mäler, *International Environmental Problems*, 6 OXFORD REV. ECON. POL'Y 80 (1991).

127. Montreal Protocol, *supra* note 60, at 1555-56.

amount of assistance being provided under the Montreal Protocol is 220 million dollars.¹²⁸ The amounts required to finance significant restrictions on GHG emissions from developing countries in the next several decades would run to thousands of billions. Practical political factors would preclude direct transfers from the developed countries of anywhere near such amounts.

The inherent drawbacks of using trade restrictions to induce process regulation by other nations and the limitations of direct monetary transfers make it appropriate to consider using market-based incentive systems that would more effectively harmonize trade and environmental objectives. One option is to impose taxes or charges on pollution or other forms of environmental degradation. The European Community, for example, is considering adoption of a significant tax on fossil fuels in order to curtail GHG emissions.¹²⁹ Nations that jointly agreed to impose such charges on domestic processes or products could seek to impose equivalent levies on imported products. As already noted, such levies standing alone, even if agreed to by a group of nations, would require scrutiny in order to prevent strategic efforts to secure competitive advantage in the name of the environment. But the burden of justification should be eased if signatory nations agreed to set aside all or a part of the revenues for assistance to LDCs that agreed to work toward reduction of the pollution in question. As noted, determining the appropriate countervailing duty on imported products made by processes that are not subject to equivalent pollution or taxes is an inherently somewhat arbitrary exercise. But, the danger of arbitrariness is reduced when the duties are fixed through a process of broad consensus. A further advantage of pollution or risk taxes or fees is that they will, in most cases, achieve a given level of environmental protection at substantially lower cost than command and control regulation because they allow different sources and nations flexibility to achieve greater or lesser levels of control based on their control costs.¹³⁰ By lowering the cost of achieving environmental protection, they make it easier for nations to agree to more protective environmental standards. They also provide strong incentives for technological innovation; firms that can find new, cost-effective ways to provide goods and services with less pollution will pay less in taxes and enjoy a competitive advantage. By harnessing the power of the market in the service of ecological protection, they harmonize the trade and environmental goals at both a practical and a conceptual level.

Several drawbacks exist to the use of fees or taxes to reduce pollution from industrial and commercial processes. In the case of some environmental problems, such as global warming, quite high fees or taxes would be needed

128. See *International Ozone Conference Opens*, XINHOU GENERAL NEWS SERVICE, June 26, 1990, available in LEXIS, Nexis Library.

129. See Proposal for a Council Directive Introducing a Tax on Carbon Dioxide Emissions and Energy, 25 BULL. EUR. COMM. 46-47 (No. 5, 1992).

130. For an overview of the potential role of economic incentives in promoting environmental protection, see Richard B. Stewart, *Controlling Environmental Risks Through Economic Incentives*, 13 COLUM. J. ENVTL. L. 153 (1988).

in order to induce significant limitations on net GHG emissions. There is often strong political opposition to such taxes, especially from industry. While compliance costs would in most cases be appreciably lower under a system of fees or taxes than under command and control regulation, total industry outlays would often be greater because industry would have to pay a fee or tax on the pollution remaining after reductions were made; under command and control regulation, such residual pollution is "free." The very large revenues created by regulatory-oriented fees or taxes would also create problems under a system that earmarked some or all of the proceeds for assistance to LDCs. The prospect of massive international transfers would increase domestic political opposition to taxes. The developed countries would be reluctant to entrust international institutions with authority over such vast revenues. IGO bureaucracies would not be well equipped to ensure that transfers on such a scale would be wisely and effectively spent.

A fee system would also require accurate monitoring of emissions. Accuracy may be particularly difficult to achieve in the case of some pollutants, such as the GHG methane. Professional and administrative capabilities in many nations are primitive. Proxy measures for actual emissions could, however, be developed. Moreover, the development of accurate monitoring capabilities, data disclosure practices, and other methods of compliance verification is essential to secure implementation of environmental agreements regardless of whether command and control or market-type instruments are used.

An alternative market-based approach for dealing with environmental degradation is transferrable pollution or resource use permits. The United States has successfully used this approach to reduce lead in gasoline, and is implementing an ambitious system of tradeable pollution deduction credits to reduce sulfur air emissions by fifty percent.¹³¹ In the international context, a tradeable permit system might be used to limit GHG emissions.¹³² Participating nations would agree to restrict net emissions of GHGs from their territory according to an agreed-upon schedule. Such an agreement would in effect establish a net GHG emissions allowance for each participating nation. Nations that did not need to use their entire allotment could sell their excess allowances to others. Such sales could either be made between nations, or between private firms in different nations that had been allocated allowances by their respective nations.¹³³ Transferrable permits have the same desirable cost-reducing and innovation-enhancing properties as taxes or fees. Firms that are successful in developing less-polluting ways of doing

131. See Clean Air Act Amendments of 1990 §§ 401-416, 42 U.S.C. §§ 7651-7651o (Supp. II 1990).

132. See Richard B. Stewart & Jonathan B. Wiener, *The Comprehensive Approach to Global Climate Policy: Issues of Design and Practicality*, 9 ARIZ. J. INT'L & COMP. L. 83 (1992).

133. The Montreal Protocol allows trading of CFC allowances in connection with industrial rationalization. The Global Climate convention allows signatories to adopt joint measures for dealing with GHGs. This could include international trading systems.

business can make money by doing so, and sell their excess allowances to other firms for whom it is more difficult and costly to reduce emissions. In addition, one can blunt industry opposition to controls by giving allowances to industry rather than auctioning them off, thus maintaining the "free" status of residual emissions.

In order to win their assent to limitations, LDCs would probably be given relatively more allowances than developed nations. This would represent a transfer of valuable in-kind assets to the LDCs, but in a form less likely to excite domestic political opposition than would outright cash grants. International market transfers of such allowances would be a very effective way of transferring capital and appropriate technology to LDCs. For example, firms in developed countries would provide capital and know-how, including technology protected by intellectual property rights, to foreign nations or firms to enable them to provide goods or services in a more energy-efficient fashion. The firms in the developed countries would be compensated for these investments in part by transfers from the LDCs of net GHG emission allowances that are not needed because of the energy savings obtained as a result of the investment. The developed country firms could use such allowances themselves, or, more likely, sell them to other firms anywhere in the world. The development of an international "green" currency, in the form of GHG allowances, would help channel resources to take advantage of the most cost-effective opportunities for GHG worldwide. This decentralized, market-based system could be supplemented by bilateral or multilateral governmental grants, but it would likely be far more effective in ensuring appropriate, cost-effective technology transfer than exclusive reliance on international bureaucracies. For this reason, a system of transferrable allowances would be even more effective than taxes or fees in harmonizing the FTR and environmental protection. It would make environmentalists of Adam Smith and David Ricardo.

CONCLUSION

The economy is global. Many of the various environmental externalities generated by economic activity are also global in scope. Even when pollution is local, measures to deal with it can generate worldwide competitiveness externalities. Devising effective responses to these externalities is a major political and institutional challenge. The experience in federal-type systems underscores the importance of reconciling environmental protection measures with the FTR upon which economic welfare so heavily depends. The federal-type experience suggests the need for some form of international tribunal to assess the validity of trade-restrictive measures assertedly justified on environmental protection grounds, as well as legislation by international agreement. Such legislation may, in appropriate circumstances, impose restrictions on trade in order to promote common efforts at environmental protection. In many cases, however, the interests in environmental protection and free trade will be more effectively promoted through increased international use of market-based incentives rather than command regulation.

