

27 ECGLQ 1295
(Cite as: 27 Ecology L.Q. 1295)
 Ecology Law Quarterly
 2001

**Symposium: Environment 2000--New Issues for a New Century
 Responding to the Global Warming Problem**

***1295 SOMETHING BORROWED FOR SOMETHING BLUE: LEGAL TRANSPLANTS AND THE
 EVOLUTION OF GLOBAL ENVIRONMENTAL LAW**

Jonathan B. Wiener [\[FNa1\]](#)

Copyright © 2001 Ecology Law Quarterly; Jonathan B. Wiener

This Article addresses the evolution of legal rules to govern the global environment. It traces the "borrowing" of legal ideas from national law into international law, in particular the borrowing of emissions trading and the comprehensive approach into the Rio and Kyoto climate change treaties. The Article argues that such "vertical legal borrowing" is related to, yet importantly different from, the pervasive "horizontal legal borrowing" across national legal systems that has been much studied by comparative law scholars. The Article develops both positive and normative assessments of vertical legal borrowing, arguing that it is often suppressed but increasingly essential to the success of global environmental law. Yet vertical legal borrowing must be undertaken with care, adapting the borrowed national law concept to the very different institutional framework of international law. The Article suggests that the major flaw in the Kyoto Protocol--the omission of developing countries--derives from an attempt at vertical legal borrowing without such adaptation. More generally, the Article suggests that whether legal rules evolve towards efficiency depends on the institutions of lawmaking and legal education.

***1296 CONTENTS**

Introduction	1296
I. Legal Borrowing: Transnational and Trans-Echelon	1298
II. How the Climate Change Treaties Borrowed from National Law	1308
A. Something Borrowed for Something Blue	1308
1. The Legal Concepts Borrowed into the Climate Treaties ..	1308
2. Origins of the Borrowed Concepts	1314
B. Why the Legal Concepts Were Borrowed	1320
1. The Comprehensive Approach	1321
a. Environmental Advantages	1321

b. Economic Advantages	1324
c. Other Advantages	1325
d. Problems with Comprehensiveness	1326
2. Emissions Trading	1327
a. Economic Advantages	1327
b. Treaty Participation	1328
c. Problems with Tradeable Allowances	1337
III. Implications	1343
A. Positive Analysis	1345
B. Normative Analysis	1351
C. Cost-Benefit Analysis of Trans-Echelon Borrowing	1360
D. Flaws of Vertical Borrowing in the Kyoto Protocol	1362
Conclusion	1365

INTRODUCTION

What law shall govern the deep blue sky? Against the long history of law, global environmental change is a new and complex problem for which we are fashioning a new legal regime. It is the new frontier of environmental law. New legal regimes typically, perhaps inevitably, use concepts from prior legal regimes. As Roscoe Pound put it nearly a century ago, the "history of a system of law is largely a history of borrowings of legal materials from other legal systems and of assimilation of materials from outside the law." [\[FN1\]](#)

The global climate change treaties [\[FN2\]](#) manifest this borrowing act: as I discuss below, the central design features of these *1297 treaties are legal concepts borrowed from national environmental law. But why did this legal transplantation occur, and is it desirable? What does it teach us about the evolution of legal rules? What does it portend for the future of global environmental law?

One might look for answers to these questions in the rich literature on legal borrowing. A great deal of work has been done to document and explain the pervasive use of legal transplants from other legal systems. But that line of scholarship offers surprisingly little guidance on the present question-- borrowing into global environmental treaties--because the extant literature focuses almost entirely on borrowing across national legal systems (what I will call "horizontal" or "transnational" borrowing). What the literature on legal borrowing has apparently not yet addressed is borrowing between national and international law (what I will call "vertical" or "trans-echelon" borrowing). As a positive matter of empirical legal evolution, comparativists tend to see national law as borrowing from other national law, and internationalists tend to see international treaty law as borrowing from other international treaty law; but never (or rarely) the twain shall meet. Neither of these scholarly traditions directly analyzes vertical borrowing between these echelons of law. Yet even a brief inquiry reveals that there are many examples of vertical legal borrowing between national and international law in practice; what is needed is a more rigorous analytic approach to how, why, and when these trans-echelon transplantations occur, and when we should choose to undertake them. Meanwhile, as a normative matter, the debate among comparativists over the propriety of transnational borrowing has only limited guidance to offer to those interested in the very different question of trans-echelon borrowing, because the merits of horizontal and vertical borrowing depend on rather different considerations.

Here, I examine the reality of trans-echelon borrowing in global environmental lawmaking as a step toward a more

general analysis (both positive and normative) of vertical legal borrowing from the national to the international echelon. First, I take note of the theory and reality of legal borrowing, both transnational and trans-echelon. Second, I describe the significant, conscious, and purposeful vertical legal borrowing that occurred in the climate treaties, which adopted two pivotal legal concepts from national pollution control law: integration and incentives. Third, I ask when and why such trans-echelon borrowing is likely to occur. This positive analysis has implications for the likely *1298 future of international environmental law and more generally for the evolution of legal rules. Further, this analysis of vertical legal borrowing offers new insights into the debate over whether and how legal systems evolve toward efficient rules. Fourth, I explore the normative factors that make such trans-echelon borrowing desirable or undesirable. I suggest that vertical borrowing will be crucial to the future success of global environmental law, especially as treaties shift from regulating the interfaces of interstate relations to protecting global public goods, such as climate--from resolving interstate disputes to protecting the planet as a whole. This analysis emphasizes, though, that legal concepts from national law cannot be imported carelessly into international law; if they are to succeed, they must be carefully selected and then adapted to the significantly different institutional framework at the international level. I suggest that the current predicament of the climate treaties derives in large part from their incomplete adaptation of the national law concepts to the international legal system. Finally, I conclude the Article with observations on global environmental law, legal evolution and the role of law schools, and a curious irony in the project of trans-echelon legal borrowing.

I LEGAL BORROWING: TRANSNATIONAL AND TRANS-ECHELON

"Legal borrowing" or "legal transplantation" is a familiar subject of study in comparative law. Nations frequently borrow doctrines from each other, often across vast distances of space and time. [FN3] Much of American law was received from England (and, in some places, from France or Spain). [FN4] The term "legal transplant" is even defined by its foremost exponent as "the moving of a rule or system of law from one country to another." [FN5] A rich academic literature on examples of such cross-national legal borrowing [FN6] has developed, and a spirited scholarly debate has *1299 been running over the desirability of transplanting legal ideas from one national context to another. [FN7] The most recent debates address the propriety of post-communist nations adopting concepts from U.S. law, [FN8] and the propriety of the U.S. Supreme *1300 Court borrowing legal analyses from foreign constitutional courts. [FN9] This branch of comparative law, however, has not yet addressed transplants into international treaty law.

Meanwhile, in the field of international treaty law, practitioners and scholars emphasize borrowing within a different echelon: from prior international treaties and from works on public international law. Each international treaty is seen as an effort to build on and extend a coterie of principles of international law, principles that are viewed as endogenous to that body of law. [FN10] There are several plausible reasons for this mindset. First, as in many other disciplines, [FN11] international law scholars tend to seek incremental progress within their domain, seldom investing in the costs of searching for analogous notions in other fields. International law attracts an epistemic community of international lawyers who become insulated from their national law colleagues. Second, as in other disciplines, there is a certain pride in maintaining the discipline of international law separate from colonization by other intellectual movements. [FN12] Indeed, the aspiration of international law has long been to develop a set of international norms and a scholarly discourse separate from (and perhaps morally superior to) the laws of nation-states. [FN13] Third, in practice, busy diplomats tend to *1301 use what they know: having negotiated a treaty on one topic, they apply its concepts and design to the next treaty on a new issue. International environmental treaties are typically negotiated by the foreign ministries of each country (such as the U.S. State Department), rather than by the ministries responsible for substantive regulatory topics such as environment (EPA), energy (DOE), or forestry (USDA), nor by the environmental lawyers at the justice ministry (DOJ). Fourth, much international law has developed at the interfaces between different legal cultures--trade and war--so that historically many international rules developed separately from domestic law. [FN14] Fifth, even where trans-echelon legal borrowing does occur, international treaty drafters may be reluctant to disclose that fact, for fear of undermining the perceived neutrality and legitimacy of their product. [FN15]

The parallel neglect of trans-echelon legal borrowing by comparative law scholars may perhaps be explained by the traditional focus of their home discipline on the comparison of national legal systems and culture. [FN16] Trans-echelon legal borrowing from national into international law may thus have fallen awry of analytic blinders on both sides. Whatever couplings or comminglings between national and international law have in fact occurred might have been so discreet, or perhaps so scandalous, that no one seems to talk about them in polite company (at least not for very long).

Even if borrowing from national into international law occurs in practice, it seems to have been neglected or hushed, both in officialdom and in theory. [\[FN17\]](#)

***1302** Whatever the reason, insufficient attention has been given to the possibility of legal borrowing by international treaty law from national law. This kind of borrowing would be "vertical" or "trans-echelon" rather than "horizontal" or transnational. Despite the prevalence of journals addressing the joint subject of "Comparative and International Law," one is hard pressed to find the comparative law concept of legal borrowing being applied to the sister subject of international law. Indeed, comparative and international law may have kept a polite distance for some time, the former offering disinterested cross-cultural understanding and the latter offering normative projects of supranational governance. [\[FN18\]](#) It is difficult to prove a negative and one cannot say that no attention has been paid to this kind of trans-echelon borrowing; indeed I will cite some examples below. But compared to the voluminous literature on transnational legal borrowing, the study of trans-echelon borrowing into international treaty law is quite sparse.

Of course, national law does affect international law. Unilateral national action often precedes, and sometimes spurs, international treaty negotiations. [\[FN19\]](#) That is not, however, the same thing as international treaty-writers consciously borrowing specific legal concepts from national laws; for example, national action may spur international negotiations without the latter adopting any of the legal tools employed at the national level. [\[FN20\]](#) The global accretion of consistent national law can also eventually ripen into the recognition of "customary international law" applicable to all states, regardless of the states' specific consent. [\[FN21\]](#) Again, however, that is not the same as conscious ***1303** borrowing of legal concepts into new international treaty law. Customary international law might be better understood as an extension of horizontal borrowing across states, because it involves repeated transnational borrowings that are then recognized ex post rather than an organized international deliberation about the selection of a new international legal rule ex ante.

Meanwhile, attention has, of course, been paid to the vertical movement of legal concepts in the opposite direction: the influence of international law on subsequent national law. [\[FN22\]](#) If this "downward" direction of legal influence illustrates the standard top-down process by which superior legal rules preempt or at least shape the legal rules of subsidiary jurisdictions, [\[FN23\]](#) then it does not speak to the kind of conscious, discretionary, selective borrowing of legal ideas that occurs across nations, nor to the possibility that international law might have borrowed some ideas from national law to begin with. If, on the other hand, nations are observing legal concepts in international law and electing in their discretion to borrow those concepts into their national regimes, then that would be a kind of trans-echelon legal transplantation.

That said, there has been some scholarly examination of vertical legal borrowing upward into international treaty law. The United States and the European Union, are themselves, in part, illustrations of vertical legal borrowing from their own member states. [\[FN24\]](#) At the global level, some attention has been paid to the ***1304** borrowing of international intellectual property (chiefly copyright) law from national law, [\[FN25\]](#) and vertical transplants in other areas of international treaty law have occasionally been noted. [\[FN26\]](#) But these examples are typically passed over quickly with little analysis of why they occurred or whether they were superior to the alternatives. Recently, some proposals have been made to borrow from national antitrust and bankruptcy laws to craft new international treaties. [\[FN27\]](#) These suggestions, however, tend to stop short of addressing the differences between the national and international legal systems and the question of whether these proposals could actually be adopted at the international level. One very rich contextual description of borrowing from national into international treaty law is Anne-Marie Slaughter's study of the transplantation of New Deal administrative structures from the U.S. to the U.N. system just after World War II. [\[FN28\]](#) Yet this ***1305** detailed account still does not address why other countries accepted such borrowing in that specific context, what conditions would be conducive to such borrowing more generally (indeed it implies that the post-War period of American legal hegemony may have been unique), or when such borrowing would be desirable and successful (or not) in the future.

Vertical legal borrowing has also been observed from time to time in international environmental law, though again without the depth of analysis that comparativists have accorded to transnational legal borrowing. For example, the Precautionary Principle was borrowed from German law ("vorsorgeprinzip") into international treaties on marine pollution, and later into treaties on atmospheric pollution. [\[FN29\]](#) The treaty recently negotiated on Persistent Organic Pollutants (POPs) borrows from the Swedish approach to "sunset" periods for toxic chemicals. One review suggests that

the "concept of the [World Heritage Convention] can be partially credited to an American, Russell Train," who suggested expanding the U.S. national parks system into a worldwide network. [\[FN30\]](#) That review also suggests that the 1973 Convention on International Trade in Endangered Species (CITES) was conceived by the United States at the same time that the U.S. developed its domestic Endangered Species Act. [\[FN31\]](#) On the other hand, the same review argues that although the U.S. spurred negotiation of the London Convention on ocean dumping, this treaty was ultimately patterned on a regional treaty rather than on U.S. law. [\[FN32\]](#) None of these discussions, however, explains why the international treaty drafters borrowed from national law (rather than drawing their ideas from other places), nor do they address when such vertical borrowing is desirable.

Professor Dan Tarlock has commented that "United States environmental law has served as the international standard for ***1306** the emerging regime of international environmental law." [\[FN33\]](#) Tarlock makes this remark very briefly in the introduction to an article that quickly leaves this remark behind in order to analyze the converse influence that international law may have on national environmental law. Tarlock gives three examples of international environmental law drawing from national environmental law: state liability for transboundary harm, environmental impact assessment, and hazardous waste regulations. [\[FN34\]](#) But he does not analyze why other countries accepted such borrowing in those contexts, what conditions are conducive to such borrowing more generally, the origins of the other international environmental laws that he does not cite, the importance of the three examples he cites in the pantheon of international environmental law, [\[FN35\]](#) or when such borrowing is ***1307** desirable and successful (or not). An analysis of national-to-international legal borrowing was not the focus of Tarlock's article (nor of the others cited above, save Slaughter); and that is my point. It is easy to get the impression from the scholarly literature that nations often borrow from each other, and that international treaties often borrow from each other, but that international treaties rarely or only accidentally borrow from national law.

I suspect that this bundle-board separating national law and international law is more illusion than reality. I suspect that interbreeding between national and international law occurs more frequently than has been acknowledged, [\[FN36\]](#) just as interbreeding among species in nature turns out to occur far more frequently than biologists (even Darwin) recognized until recently. [\[FN37\]](#) The reader familiar with actual examples of international law borrowing from national law may already have blanched at my suggestion that these borrowings are rare; but my main point is that they have gone relatively unexamined in the scholarly literature, at least relative to the robust treatment of transnational legal borrowing in comparative law. In the next section, I investigate one major example of vertical or trans-echelon legal borrowing in global environmental law: the adoption of national regulatory instruments into the climate change treaties.

***1308** II HOW THE CLIMATE CHANGE TREATIES BORROWED FROM NATIONAL LAW

Let us now pull back the covers and lay bare at least one significant example of conscious legal borrowing from national law into a major set of international treaties. The Framework Convention on Climate Change, adopted in Rio de Janeiro in 1992, and the Kyoto Protocol, negotiated in 1997, borrowed two fundamental regulatory precepts from national law: integration and incentives. Examining the naked history of the core legal concepts built into these treaties reveals the importance of borrowing from national into international law. We should not avert our eyes from such vertical borrowing; we should recognize its salience and debate its merits. [\[FN38\]](#)

A. Something Borrowed for Something Blue

1. The Legal Concepts Borrowed into the Climate Treaties

In the 1980s, as continuing scientific research suggested that global climate change might be a serious threat, political negotiations aimed at establishing an international regulatory policy to address greenhouse gas (GHG) emissions gained momentum. The result was the creation of two major new treaties, the 1992 Framework Convention on Climate Change and the 1997 Kyoto Protocol. These treaties did not just spring out of the blue (so to speak). There was no obvious or ***1309** deterministic path to the creation of these treaties. Throughout the negotiating process, their content was contested and their final outcome was unclear. [\[FN39\]](#) They might well have failed, and they might still.

In the late 1980s, international discussions about global climate policy focused on reducing the amount of carbon dioxide (CO sub2) emitted from the energy sector. CO sub2 was the most plentiful greenhouse gas, and the energy sector was the largest source of CO sub2 . [FN40] The Toronto Conference, held in 1988, "focused almost exclusively on carbon dioxide emissions." [FN41] In 1989, the Intergovernmental Panel on Climate Change (IPCC) [FN42] addressed the full breadth of greenhouse gases and sources in its Working Group I on Science. But, in the pivotal draft documents of the Legal Measures subgroup of the IPCC's Working Group III on Response Strategies (RSWG), the panel envisioned a framework convention to be followed by a protocol on energy-sector CO sub2 (and then, possibly, by subsequent protocols on other gases and sectors). When the formal negotiations on the FCCC began in 1990, and when what became the Kyoto Protocol was being negotiated in 1996-97, the negotiating positions of many countries (particularly the European Union) proposed fixed national limits on energy-sector emissions of CO sub2 . [FN43]

Ultimately, neither the FCCC nor the Kyoto Protocol adopted fixed national limits on energy-sector emissions of CO sub2 . Instead, both treaties adopted two crucial alternative regulatory approaches: (1) a comprehensive scope addressing not only energy-sector CO sub2 but also the sources and sinks of all major greenhouse gases (including CO sub2 , methane, nitrous oxide, and several other gases); and (2) flexible market-based incentive systems that allow voluntary reallocation of national emissions limits, including "joint implementation," "emissions trading," and the "Clean Development Mechanism" (CDM). [FN44]

***1310** How did these two regulatory ideas become part of the climate treaties? They were not invented by the foreign ministries or public international lawyers. [FN45] They were not borrowed from prior international treaties (though some slivers of pedigree were found in the Montreal Protocol). They were consciously borrowed by substantive environmental law experts who studied the attributes of the climate change problem and sought analogs in the national environmental law experience, particularly in the United States and also in other countries such as Canada and New Zealand.

Early in the new Bush administration, in early October 1989, the White House called the Department of Justice's new Assistant Attorney General in charge of the Environment Division to seek his advice on the climate treaties. Climate change was not typically in DOJ's bailiwick because no domestic laws governed emissions of greenhouse gases. Nonetheless, the White House asked DOJ to propose new ideas for U.S. climate policy. [FN46] The White House was dissatisfied with the current state of the climate change negotiations for a number of reasons, including adverse news media coverage, the change in administrations and environmental policies from Reagan to Bush, growing tension between the White House staff and the State Department over climate and energy policy, and tension between more conservative and more progressive members of the Bush administration concerning environmental policy in general. [FN47]

***1311** DOJ produced an initial memorandum recommending two fundamental changes in climate policy. First, it proposed a "comprehensive approach" addressing all major greenhouse gases and their sources and sinks. Second, it proposed using a system of international emissions trading. This memo was circulated in draft form in November 1989. After discussion with scientists, economists, lawyers, and policy experts throughout the U.S. government, [FN48] the memo was formally submitted to the White House on December 14, 1989. [FN49] After a series of meetings of the Global Change Working Group of the Domestic Policy Council, DOJ's two ideas were adopted into the official U.S. global climate policy. On December 29, 1989, the State Department sent a letter to the IPCC suggesting consideration of these two new legal ideas. [FN50] On February 3, 1990, the U.S. government held an "Informal Seminar" on these two ideas for other countries' delegates to the IPCC/RSWG meeting being held in Washington D.C. [FN51] This was the first focused intergovernmental deliberation over these two legal ideas. [FN52] Over the next year, DOJ ran an inclusive interagency working group reporting to the White House (and involving more than thirty experts from all interested agencies) that drafted a 100-page document detailing the advantages of the comprehensive approach and emissions trading. This report was published in February 1991 and was distributed to all parties at the first meeting of the formal FCCC treaty negotiations. [FN53]

***1312** Throughout the treaty negotiations, in both the FCCC negotiations during the Bush administration and the Kyoto Protocol negotiations during the Clinton-Gore administration, the United States advocated the comprehensive approach and emissions trading. At the United States' behest, the IPCC's First Assessment Report, issued in August 1990, contained substantial discussion of the two proposals. [FN54] More and more countries came to share the U.S. view. [FN55] The final text adopted in the FCCC embraces the two ideas DOJ had proposed in 1989. Article 3 of the FCCC

endorses the comprehensive approach, and Article 4 embodies the comprehensive approach by committing parties to reduce emissions of all major GHGs and to enhance GHG sinks (rather than focusing only on energy-sector CO₂). In a move toward international emissions trading, Article 4(2)(a) of the FCCC provides that countries may "jointly implement" emissions reductions.

The Clinton administration maintained U.S. advocacy of the comprehensive approach and emissions trading.^[FN56] At the insistence of the Clinton administration, the 1997 Kyoto Protocol included six classes of GHGs in its quantitative emissions targets: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆). It also gave countries credit for sink expansion (such as planting forests). The Kyoto Protocol required countries to reduce levels of net GHG emissions, weighted according to the gases' relative contribution to global warming, and did not specify separate limitations for each gas. As of the year 2000, the United States ^{*1313} government continues to be a staunch advocate of the comprehensive approach. For example, in response to a new study showing the superior environmental effectiveness of controlling methane and other greenhouse gases as well as CO₂ rather than controlling CO₂ alone, ^[FN57] the White House said that the comprehensive approach embodied in the Kyoto Protocol was the "best approach to slowing warming" because it addressed "all of the greenhouse gases" rather than just CO₂, "largely because of the insistence by American negotiators." ^[FN58] Similarly, the United States continues to advocate inclusion of sink enhancement in the climate treaties. ^[FN59]

Likewise, again at the insistence of the Clinton administration, ^[FN60] the Kyoto Protocol adopted the idea of ^{*1314} emissions trading. The Protocol expressly authorized not only joint implementation (Article 6), but also formal emissions trading under quantified emissions limitation obligations (Article 17). In addition, the Protocol created a mechanism for purchasing emissions reduction credits from developing countries (the "Clean Development Mechanism" or CDM) (Article 12). In the year 2000, the U.S. government continued to advocate international GHG emissions trading. ^[FN61]

2. Origins of the Borrowed Concepts

These two ideas--comprehensive scope (integration) and market-based emissions trading (incentives)--are core elements of the project of progressive reform of environmental law, but they do not have the same legal history. At the time they were borrowed into international treaties, starting around 1990, emissions trading had a longer history in scholarship and national law adoption; the comprehensive approach was a newer idea.

By 1990, emissions trading had long been advocated by environmental economists, ^[FN62] and had recently begun to be adopted by national governments. ^[FN63] For example, the U.S. EPA in the Carter and Reagan administrations used emissions trading to accommodate economic growth while limiting regional air pollutants; EPA used it to phase out lead in gasoline. ^[FN64] Early ^{*1315} versions of emissions trading had been employed in Canada as well. ^[FN65] Trading had also been applied, in a different form, to protect fisheries in New Zealand. ^[FN66] In addition, the U.S. Congress was about to adopt emissions trading as the regulatory approach for reducing acid rain by cutting emissions of sulfur dioxide (SO₂) in the 1990 Clean Air Act Amendments. ^[FN67] This innovative program had been conceived and promoted by the Bush administration and the Environmental Defense Fund (EDF). This public-private collaboration on SO₂ emissions trading was a major factor in making possible the consensus favoring enactment of the landmark 1990 CAA amendments. EDF was also a key player in the use of emissions trading for climate policy: the first suggestion of which I am aware to apply emissions trading internationally to greenhouse gas emissions was made by EDF economist Dan Dudek in 1987, ^[FN68] and EDF has continued to advocate this idea throughout the 1990s. Another precedent was the Montreal Protocol, which contained a provision called "industrial rationalization" under which countries could agree to shift a fraction of their production ^{*1316} quotas among each other. ^[FN69] Underscoring all of these specific precedents for emissions trading was the breakdown of the Soviet Union in 1989-90, and the concomitant recognition that command-and-control environmental policies had failed in the Soviet Bloc and that market-based environmental policies were becoming increasingly attractive worldwide. ^[FN70]

Using emissions trading in a climate treaty was not, however, immediately endorsed by the U.S. government. Emissions trading presupposes some aggregate constraint (such as a "target" or "cap") on the quantity of emissions--otherwise the tradeable emissions allowances would not be scarce and valuable. Powerful staff members within the Bush

administration were opposed to any quantitative limits on GHG emissions. [FN71] As a result, the U.S. advocacy of GHG emissions trading was initially tentative.[FN72] The United States steered the FCCC negotiations toward requiring unquantified reductions in emissions--article 4(2) ultimately obliged countries to adopt "policies and measures" with the "aim" of reducing emissions, but with no binding targets or caps. The proposal for emissions trading evolved into a proposal to authorize informal "cooperative arrangements" among nations to achieve these emissions reductions jointly. [FN73] Meanwhile, Norway--which had initially opposed any flexibility in GHG emissions limits--changed its mind to favor cost-effective approaches, [FN74] and dubbed these *1317 cooperative emissions reduction ventures "joint implementation." [FN75] That is the terminology that was written into the FCCC, Article 4(2)(a): "[industrialized country] parties may implement such policies and measures jointly with other Parties." Later, when the Clinton administration committed to quantitative GHG emissions limits, the idea of formal emissions trading (as DOJ had suggested in 1989) was revived, advocated by the U.S., [FN76] endorsed by a letter signed by 2000 economists, [FN77] and ultimately written into the Kyoto Protocol. [FN78]

By contrast, the "comprehensive approach" suggested by DOJ in the fall 1989 memo was a more original idea. There was no obvious antecedent that had adopted this approach--an integrated, multipollutant regulatory scheme based on an index of the relative environmental impact of the pollutants. The suitability of comprehensiveness was based on an understanding of the science and economics of the climate change issue. It also drew on the national environmental law experience, which consisted more of piecemeal failures than of holistic successes. [FN79] In that sense, it borrowed from learning about national law rather than from a specific national law blueprint or enacted statute. The closest national law analogs to the comprehensive, multipollutant, multisector approach were the proposals in the academic literature for "integrated pollution control." [FN80] *1318 Implementing integration at the national level is impeded by the pre-existing fragmentation of laws and institutions; the success of the comprehensive approach at the international level derived both from vertical borrowing and from the relatively more open and unstructured legal terrain at the international level.

The international regime for stratospheric ozone protection also presented a helpful analogy for the comprehensive approach to climate policy. The 1987 Montreal Protocol had adopted a limited version of a comprehensive "basket" of ozone-depleting gases, based on an index of their relative ozone depletion potential (ODP). Countries had some flexibility under the Montreal Protocol basket to reduce aggregate ODP through varied combinations of controls on specific substances (but this flexibility became moot as the phaseout requirements moved from 50% toward 100% in subsequent iterations of the Protocol). This approach reflected the concern that piecemeal regulation of only a few substances could invite shifts to other ozone-depleting substances. Moreover, the development of the ODP index encouraged climate scientists to develop a similar index for GHGs (the global warming potential, or GWP, index developed by the IPCC Working Group I). But the IPCC scientists used the GWP index primarily as a device for predicting future climate forcing and had not yet proposed that the climate regulatory regime itself embody an index-based approach. [FN81]

The comprehensive approach confronted opposition within the U.S. government. Advocates of immediate action to restrict CO sub2 emissions feared that the comprehensive approach would delay action by making the regulatory regime too complex, or by suggesting that actions already planned on GHGs other than *1319 CO sub2 would suffice. At the same time, however, opponents of action to restrict CO sub2 emissions feared that the comprehensive approach would hasten action by lowering the cost of abatement and enabling countries to tailor their actions to their own economies. Thus, the comprehensive approach was attacked both from the left as an obstacle to action and from the right as a recipe for action. The documents prepared by DOJ to advocate the comprehensive approach therefore insisted on its neutrality as to "how much" emissions control was desirable, arguing that it was only a "how to" legal design that would be superior at any level of emissions control.

DOJ gained allies for the comprehensive approach and international emissions trading in the office of the White House Counsel [FN82] (which was playing a key role in promoting innovative incentive-based environmental policy), CEA, [FN83] OSTP, [FN84] the EPA policy office (which favored economically efficient regulation), and the EPA Air office (which had a methane abatement research program). [FN85] CEQ, DOE, [FN86] USDA, [FN87] DOI, and USTR also supported the DOJ proposal. Importantly, the government's lead scientists on climate policy [FN88] approved the proposal and helped DOJ refine the scientific argument in its favor. Eventually, the State *1320 Department supported the comprehensive approach, especially at the expert staff level. [FN89]

This process of refining the policy proposals and assembling policy alliances exhibited the kind of careful multidisciplinary teamwork and analysis--deliberative policymaking--that can occur in the executive branch. Through vigorous substantive advocacy, iterative debates, and revisions over time, officials of the executive branch can successfully hone options, change minds and ultimately develop official policy. This experience shows the power of good ideas to create value in public policymaking. It also shows how difficult it can be to move new ideas through the policy gauntlet of diverse agencies, which is simultaneously a source of the fragmentation that leads to perverse piecemeal policies and a healthy check on hasty decisionmaking.

B. Why the Legal Concepts Were Borrowed

DOJ and the U.S. government did not just borrow these legal ideas because they happened to be available off the shelf. Borrowing was not a maneuver to escape "the awful labor of thought." [FN90] Quite the contrary; the proposal was a conscious and deliberate attempt to select the most appropriate legal ideas for addressing the climate change problem. [FN91] Here, the vertical borrowing act necessitated more research, thought, and effort than would drafting a climate treaty as an extrapolation of prior public international law. The basis of the proposal was the principle that regulatory systems should match the environmental and economic systems they regulate. [FN92] The *1321 problem with the focus on energy-sector CO sub2 and fixed national targets was that they neglected the interconnected and dynamic character of the climate and of economic systems. The complexities of policymaking often push decisionmakers toward rigid, narrow, piecemeal approaches. [FN93] These approaches, however, may ignore the full scope of a problem, miss lower-cost options to achieve better results, and produce unintended side effects that confound well-intentioned policies. [FN94] A broader, more comprehensive, more flexible approach accounts for the complex nature of environmental issues and economic choices. It attempts to match the regulatory design to the complex environmental and economic systems being regulated.

1. The Comprehensive Approach

For climate policy, adopting a comprehensive approach has several significant advantages.

a. Environmental Advantages

First, DOJ argued that the comprehensive approach is environmentally superior. Piecemeal approaches ignore important sources of the problem and thus neglect important opportunities to solve it. Moreover, piecemeal policies tend to be self-defeating because efforts to solve one aspect of a problem intensify other, neglected aspects. [FN95] The history of non-comprehensive pollution control in the United States provided much of the national experience on which the proposal for the comprehensive approach to climate change was drawn. U.S. environmental statutes focus on one medium at a time: separate laws for air, water, and land. Restrictions on one medium induced disposal into other media. [FN96] Like squeezing one end of a balloon, this approach shifted the problems elsewhere and delayed the attainment of the primary goal--a clean and safe *1322 environment. An integrated approach would control pollution more comprehensively and effectively. [FN97]

In the climate context, DOJ argued that focusing solely on energy- sector CO sub2 would induce perverse shifts in GHG emissions. For example, controlling energy-sector CO sub2 alone would invite fuel switching from coal to natural gas, because burning coal emits about twice as much CO sub2 per unit of energy produced as does natural gas. But natural gas is almost pure methane (CH sub4), and methane is roughly 20 times more potent per mass than is CO sub2 at causing global warming. [FN98] Hence, as little as a 6 percent rate of fugitive methane emissions from natural gas systems would be enough to fully offset the CO sub2 -related benefits of this fuel switching. [FN99] In the U.S., natural gas systems rarely lose more than 2 percent of their methane. In Europe, however, the methane leakage rate has been much higher, often exceeding 6 percent. The problem was particularly bad in Russia, which would likely be the principal supplier of natural gas used to replace European coal. Thus, a CO sub2 -only policy in Europe could actually yield a net increase in the contribution to global warming. [FN100]

Moreover, CO sub2 in the atmosphere enhances plant growth. [FN101] Thus for any given level of global warming prevention, this plant fertilization effect may offer an additional reason to reduce CO sub2 *1323 emissions less than other GHG emissions. Of course, for significant climate protection efforts, both CO sub2 and methane emissions would need to be reduced to some degree.

A related but distinct point is that burning fossil fuel emits not only CO sub2 , which warms the planet, but also particulate matter, which tends to cool the planet. As a result, reducing fossil fuel combustion could have a smaller net impact on future warming, at least in the short term before the particulates precipitate out of the atmosphere and the CO sub2 persists, than would controls on other GHGs such as methane from natural gas leaks. [FN102] If ecological damage is more sensitive to the rate of warming than to the ultimate equilibrium warming, these short-term influences on warming could be important.

Another example of a perverse shift due to piecemeal policy involves replacing fossil fuels with biomass fuels, such as ethanol made from corn. If the policy only addresses energy-sector CO sub2, it seems attractive: the emissions of CO sub2 from burning the fossil fuels would be reduced or eliminated, and the emissions of CO sub2 from burning the biomass fuels would presumably be at least partly offset by the sequestration of that same CO sub2 from the atmosphere by the corn as it grew. But the story is not that simple. Focusing only on energy-sector CO sub2 neglects three important categories of emissions. First, the CO sub2 emissions from the ancillary agricultural operations needed to farm the corn, manufacture fertilizer, irrigate the land, and convert the corn into fuel would likely be large. [FN103] Second, growing corn employs large quantities of nitrogen fertilizer, which release nitrous oxide (N sub2 O) emissions--a GHG almost 300 times more potent per mass than CO sub2 . Third, if the corn is grown on cleared forest lands, the carbon liberated from the forest ecosystem (trees, plants, and soils) and the reduced ability of the unforested land to sequester carbon (compared to the corn field) must be counted as well. Together, these three side effects could make biomass fuel much less attractive, and possibly even perverse, as a climate protection strategy.

DOJ argued that the solution to these perverse shifts is not to abandon climate protection, but to make it comprehensive so that it encompasses all the major GHGs (including methane and *1324 nitrous oxide as well as CO sub2) and all the relevant sectors (including agriculture, forests, and energy). Comprehensiveness would define performance and measure results in terms of the full impact of each policy intervention on climate change, thus preventing policy from being thwarted by perverse shifts among GHGs and sectors.

A comprehensive approach would also give sources the incentive to find ways to reduce all of these GHGs across all sectors. Russia and other countries with leaky natural gas systems would now invest in closing methane leaks. [FN104] And countries would have a new incentive to invest in conserving and expanding forests--potentially aiding biodiversity conservation as well as climate protection. [FN105]

b. Economic Advantages

In addition to its environmental advantages, DOJ also argued that the comprehensive approach would have economic advantages. Allowing a wider array of control options reduces the cost of achieving the overall objective. By allowing countries the flexibility to choose which GHGs they reduce in which sectors, the comprehensive approach affords them the opportunity to make the most cost-effective reductions. Because there is so much variety in GHG limitation opportunities across nations, the comprehensive approach would yield large cost savings, as compared to a piecemeal approach that fixes limits for CO sub2 alone or for each gas separately. A comprehensive approach would regulate the net CO sub2 -equivalent emissions from each country, not the specifics of how the reduction is to be achieved, thereby protecting the climate at lower cost. For example, the U.S. DOE estimated that meeting an emissions target for the U.S. of 20% below 1990 levels by the year 2010 via comprehensively addressing all GHGs, instead of just controlling energy-sector CO sub2 alone, would reduce costs by 75%; adding the option of sink *1325 enhancement would reduce costs by 90% compared to the energy-sector CO sub2 policy. [FN106] Similarly, a World Bank study found that India could reduce its costs 80% by being able to control all GHGs instead of energy-sector CO sub2 alone. [FN107] The most recent and thorough study confirms these results. Using an integrated assessment model of the world economy, a research team at MIT found that a comprehensive approach to all GHGs and sectors would reduce the global costs of meeting the Kyoto Protocol targets by at least 60% compared to controlling CO sub2 alone. [FN108]

c. Other Advantages

DOJ also urged that the comprehensive approach would establish a more equitable position for all nations at the regulatory negotiations table. Because of the differences across countries in their economic situations and hence their opportunities to control sources and expand sinks, a piecemeal policy inevitably favors some nations while disproportionately burdening others. The comprehensive approach allows each country to choose its best mix of policies, thus dealing more evenhandedly with countries of widely different internal economic and social configurations and trajectories.

Further, the cost and fairness advantages of the comprehensive approach would have another benefit: attracting participation in international climate policy. Since climate change and the regulatory actions addressing this problem will affect each nation differently, each country's own best policy responses will vary. No single, narrow regulatory tactic will be attractive to all of the world's countries; flexible approaches will have wider appeal. Policy instruments that are less costly--individually and collectively--will stand a greater chance of being acceptable to all parties and attracting their participation in the treaty.

*1326 d. Problems with Comprehensiveness

Concerns about the administrative practicality of a multi-gas approach led some to propose an initial narrow regulatory mechanism (addressing only CO sub2) that would later expand into a more comprehensive instrument (addressing multiple GHGs). DOJ argued that this strategy was flawed. [\[FN109\]](#) First, it would initially forfeit the environmental and economic advantages of the comprehensive approach discussed above. Second, the intended expansion of its scope would likely be delayed or thwarted: the countries and interest groups least burdened by the initial narrow design would become entrenched in their favored positions and would resist expansion to a more comprehensive approach later. Third, this piecemeal strategy would fail to provide incentives for the innovations in monitoring and abatement methods for non-CO sub2 gases that would be needed to run an effective comprehensive program. Fourth, the measurement of non-CO sub2 gases and non-energy sectors, even if initially difficult, would provide benefits that are worth the cost. These measurement methods are not frozen, but would improve in response to policy incentives. [\[FN110\]](#) And such measurement is necessary even under a CO sub2 -only policy, if we are to evaluate the true effectiveness of the policy in protecting the climate; ignoring the non-CO sub2 gases does not make them go away. Fifth, the GWP index used to compare the relative impacts of the GHGs on global warming, while an imperfect measure, is superior to the alternatives of excluding non-CO sub2 GHGs (tantamount to weighting them at zero--a much larger error than the marginal imprecision of the GWP index) or comparing them arbitrarily. At the same time, DOJ argued that the gas-comparison index should be refined and improved over time to correct several problems in the GWP, such as insensitivity to changing atmospheric composition and neglect of non-warming impacts. [\[FN111\]](#)

*1327 In sum, DOJ argued, the comprehensive approach would be a major advance in designing effective and intelligent climate policy. It would deliver superior environmental and economic results, be more fair, and attract more countries to join the treaty. Its administrative costs would be manageable and worth the investment. Based on this analysis, DOJ proposed that the international climate treaties should borrow the concept of comprehensiveness (integration) developed in national environmental law. The FCCC and the Kyoto Protocol did so, employing vertical legal borrowing to address a complex global environmental issue.

2. Emissions Trading

a. Economic Advantages

Abatement costs differ significantly from one country to the next. Abatement costs vary because differences in technology, available substitutes, and economic structures make avoiding future emissions much less costly in some places than others. One study found a fifty-fold difference in GHG abatement costs just within the membership of the European Union. [\[FN112\]](#) The global range of abatement costs is likely to be greater. This variation makes uniform

emissions abatement requirements inefficient. Uniform abatement targets miss the opportunity to supply the same overall global protection at lower cost.

DOJ therefore argued that emissions trading would be superior to fixed national emissions limits. First, it would reduce the cost of abatement. In the United States, allowance trading programs for sulfur dioxide emissions have proven to be far more cost-effective than fixed performance standards, cutting costs by roughly half. [FN113] In the global climate context, studies predict 50 to 70 percent cost savings from allowing locational flexibility in GHG reductions through emissions trading. [FN114] Second, emissions trading would stimulate greater dynamic innovation in environmental protection efforts because it would give sources a continuous motivation to improve abatement methods. Sources can increase profits by devising or adopting new abatement methods that are less costly than buying emissions permits and that enable the source to sell permits at a profit. [FN115] Third, emissions trading would not require undue administrative costs. Although measuring actual emissions is not a negligible cost, it can be worthwhile if it improves environmental effectiveness. And measuring emissions would be required under fixed national emissions limits as well as under emissions trading. [FN116] All that emissions trading would add is the need to track allowance holdings. Thus trading would be only modestly more administratively costly and would be both socially less costly and environmentally more effective than fixed emissions limits.

b. Treaty Participation

DOJ argued that emissions trading--through its lower abatement costs and its resource flows to developing countries--would attract more countries to participate in the treaty. [FN117] Global participation is important because GHG sources are widespread. Since developing countries are expected to increase their GHG-emitting activities rapidly over the next few decades, [FN118] constraints imposed on industrialized countries alone could omit a huge fraction of global emissions. Further, because GHG sources are geographically mobile (able to move from country to country), a geographically-limited policy restricting emissions only in some countries could induce emissions sources to shift or "leak" to unregulated countries; hence total emissions will not decrease as planned. For example, a policy limiting emissions only in industrialized countries could accelerate the growth in developing country emissions. [FN119] A geographically incomplete policy that induces leakage has several undesirable consequences. It at least partly offsets the environmental effectiveness of the agreement because fewer reductions are achieved than the policy plans for. In extreme cases, it could actually increase total emissions over the unregulated scenario. [FN120] Moreover, the economies receiving the leakage thereby become more GHG-intensive, and as a result, they later find that participation in the treaty is even more difficult and costly to undertake than it had been initially; hence over time, leakage further inhibits global participation. [FN121] Further, even if actual leakage would be small, fear of it might be an obstacle to securing widespread participation. The Byrd-Hagel Senate Resolution, passed 95-0 shortly before the final negotiations on the Kyoto Protocol, [FN122] refuses to ratify climate change treaties in which key developing countries do not participate. The Kyoto Protocol does not require developing countries to limit emissions, and in light of Byrd-Hagel, the Clinton administration decided not to submit the Kyoto Protocol to the Senate for ratification until "meaningful participation" by developing countries had been arranged. [FN123] In sum, choosing instruments to maximize the global coverage of sources and to minimize leakage is a central challenge of global regulatory design.

Reducing the costs of abatement (through the comprehensive approach and emissions trading) is important, but not sufficient to engage global participation. Lower cost will attract those for whom the benefits of climate protection then outweigh its costs. At the same time, the benefits of climate protection vary across countries. Poorer countries may be more physically vulnerable to changing climate than are wealthier countries. But wealthier countries typically place a higher priority on long-term global environmental protection than do poorer countries for whom more local and much more immediate problems (such as clean drinking water and poverty) are more pressing. Thus wealthier countries may perceive greater benefits from long-term climate protection than do poorer countries. [FN124] Some countries, perhaps including China, Russia, and Canada, might even believe they stand to gain from climate change, because they calculate that they will enjoy greater agricultural productivity if temperatures rise. [FN125] Such countries may not simply be free riders (players for whom cooperative action is beneficial but who would rather let others bear the cost), but "cooperative losers" (players for whom cooperative action to prevent climate change is harmful, and who therefore resist cooperation by anyone). [FN126] Because these countries are also large GHG emitters, any international regulation will need to attract meaningful participation from these countries in order to succeed. Attracting participation by

important cooperative losers is even harder than deterring free riding. Cooperative losers might not assent without extra compensation--enough to overcome their compliance costs and their foregone (perceived) benefits from the changing environment. [\[FN127\]](#)

Because the voting rule for international treaties is consent--meaning that treaties bind only those who consent to be bound [\[FN128\]](#)--global environmental regulation cannot be *1331 imposed on unwilling countries. This is quite different from the voting rule for national legislation, where a majority can impose environmental regulation on non-consenting polluters. To be sure, the real international system does involve some coercive pressure. Countries do consider consequences of reputation (shame vs. esteem), [\[FN129\]](#) domestic special interests, transnational coalitions, [\[FN130\]](#) military force, and arm-twisting trade sanctions.[\[FN131\]](#) Overall, though, international environmental treaty law remains much closer to consent than to the autocratic or majoritarian coercion that is standard practice under national law. [\[FN132\]](#) The tendency to seek consensus in international negotiating sessions reinforces the necessity to attract the consent of all countries to any proposed regulatory treaty.

In general, national assent to a treaty requires a positive national net benefit. [\[FN133\]](#) Unless a nation views joining a treaty as in its interests, it is unlikely to join. Of course, "net benefit" and "interest" are meant quite broadly here. The point is that each country must perceive joining the treaty as attractive on balance, in terms of its own interests (including economic, social, political, reputational, fairness, and other concerns), or else it will not join. In economic terms, treaties must satisfy not just Kaldor-Hicks efficiency (aggregate net benefits), but the more *1332 stringent test of Pareto-improvement (individual net benefits) for all those countries who participate. [\[FN134\]](#)

International treaties are thus adopted by a voting rule much more analogous to negotiated multiparty contracts than to national legislation. [\[FN135\]](#) As the number of parties grows, the cost of multiple negotiations increases, as does the likelihood of a nation acting as a holdout, insisting on satisfaction of its interest as the price for its assent. [\[FN136\]](#) Uncertainty about other countries' likely cooperation may induce strategic non-cooperation (free riding). [\[FN137\]](#) And "cooperative losers" will have incentives to try to block collective action by others. Assuring participation is thus delicate, difficult, and costly. At the international level, the best regulatory instrument must therefore strive to satisfy the criterion of "participation efficiency"--the ability to attract participation at least cost. [\[FN138\]](#) Under a voting rule requiring consent, participation efficiency is at least as important as compliance cost-effectiveness or any other policy attribute. The most participation-efficient regulatory instrument would maximize the difference between the benefits of participation and the costs of securing participation. The benefits of participation include better control of globally dispersed sources, reduced leakage, a wider array of abatement opportunities, and reduced free riding. The costs of securing participation include the out-of-pocket costs of making side payments, the reduced policy stringency needed to attract holdouts, and the distortionary effects (perverse incentives, often called "moral hazard") of paying compensation to those who would otherwise not participate. *1333 Compensation for participation is essentially a subsidy for abatement, which can result in perverse impacts: such subsidies can reduce emissions at each firm but also attract greater entry and investment into the emitting industry, thereby increasing net emissions, perhaps to a level even higher than without the subsidy for abatement. [\[FN139\]](#)

In the climate context, the benefits of securing participation by all major emitters are significant. If major cooperative losers fail to participate, the result could be a treaty that is environmentally futile as emissions rise in those countries, more costly because abatement opportunities in those countries are foregone, and unratified in other emitting countries who fear leakage. On the other hand, direct compensatory side payments to these countries large enough to attract their participation could create perverse incentives that reduce the effectiveness of the global regulation (such as stimulating an increase in the size of the emitting industry in the country receiving the side payment). In addition, it is also possible that some countries would posture as cooperative losers in order to demand side payments, potentially enough to result in higher total emissions. [\[FN140\]](#)

*1334 Instead of being subsidized, participation might be coerced, perhaps through threats of trade sanctions. Loss of trading partners could induce free riders and even cooperative losers to participate because of the fear that non-cooperation would be more costly than cooperation. [\[FN141\]](#) While this approach avoids the perverse incentive problem of subsidies, several other problems could be created instead. Threats of trade sanctions may not be credible because they would impose high costs on both sides of the trade barriers. [\[FN142\]](#) Trade sanctions may also distort trade, impair global economic efficiency, and spur retaliations in the form of a trade war. [\[FN143\]](#) Even if they were imposed, it is

not clear that trade sanctions would be effective in changing the behavior of target countries. They might hurt the country's populace and strengthen the government's political case for resisting foreign meddling. [\[FN144\]](#) Further, even if sanctions were imposed and effective, they might injure the target country's economy so much that compliance would become more difficult or impossible, thwarting the goal of inducing environmental protection. [\[FN145\]](#) Finally, trade sanctions imposed by wealthy countries cut against principles of fairness. [\[FN146\]](#)

Thus, putting aside pure payments to abate and the use of trade sanctions, the challenge was to attract participation to a regime of limits on emissions. Emissions taxes would confront non-participation by large emitters, especially cooperative loser countries. Coupling taxes with compensatory side payments would undermine the incentive effect of the tax. [\[FN147\]](#) On the other hand, a treaty could employ fixed quantity targets coupled with a financial aid package for cooperative losers. [\[FN148\]](#) This would help secure some participation while the quantity limit on emissions ^{*1335} would prevent the perverse effect that side payments would ordinarily have on the total level of emissions. But fixed national emissions limits would be cost-ineffective, failing to allow emissions reductions to be reallocated to the lowest-cost locations.

For these reasons--cost saving and participation efficiency--DOJ suggested that the treaty could use tradeable allowances. This would combine the cost-effectiveness of trading with the payments for allowance sales that would secure the participation of cooperative losers. By capping aggregate emissions, this approach would avoid the perverse effect on total emissions that would otherwise result from side payments. And the side payments to cooperative losers could be embodied in extra initial allowance allocations to those countries. In this "cap-and-trade" system, cooperative losers would be assigned extra allowances as a form of compensatory payment to secure their participation. These "headroom" allowances are a new asset that can be sold to earn profits in the allowance trading market, thus financing domestic economic development along a lower-emissions path in developing countries. In order not to increase total global emissions, the allowances granted to cooperative winners must be correspondingly lower. [\[FN149\]](#)

Another advantage of embedding compensatory side payments in the emissions trading system, rather than employing direct financial aid, is the difference between foreign aid and international trade. [\[FN150\]](#) Aid involves cash flows from donor governments to recipient governments. Trade involves exchanges by private sector actors in each country, such as transfers of cash or low-emission technologies in return for emissions allowances. Several factors suggest that trade is superior to aid in the climate policy context. Trade is likely to yield abatement investments that are more cost-effective, less impeded by transaction costs, and more decentralized, competitive, and innovation-enhancing than is official government aid. For the industrialized countries, trade is likely to be more economically advantageous because it may generate domestic collateral benefits such as increased employment in the exporting and ^{*1336} technology development sectors. [\[FN151\]](#) Also, private-sector trading is less likely to confront political opposition than is taxpayer-financed foreign aid. From the developing countries' perspective, aid may be less effective than trade because it is subject to more bureaucratic constraints (in both donor and recipient governments) and is less responsive to local needs. [\[FN152\]](#) Finally, trade is likely to invite less posturing about the amount of compensation expected by recipient countries than is aid. [\[FN153\]](#)

The same analysis of instrument choice may be stated in the language of law- and-economics. The status quo ante (no limit on a country's emissions) represents a default entitlement to emit GHGs. The atmosphere is an "open-access commons" that anyone can use as a disposal site for GHGs. [\[FN154\]](#) Under autocracy or majority rule, the state could adopt a law to which all parties would then be bound, including those who did not want to be bound. The law could choose four basic remedies, it could: (1) confirm the entitlement to emitters to emit; (2) shift the entitlement to victims to be free of emissions (in total, that is, by banning emissions, or in part, that is, by placing some non-zero limit on emissions); (3) set the amount that emitters must pay to compensate victims for the harms of the emissions; or (4) set the amount that victims must pay to compensate emitters for the costs of abatement. [\[FN155\]](#) Under the consent voting rule at the international level, however, there is no central state to impose ^{*1337} such a remedy and it is unlikely that GHG sources would agree to relinquish their emission entitlement (or pay compensation to victims) without the emitters being compensated for their costs. As Robert Dorfman puts it, the complication of international environmental problems is that "the world is divided into entities called 'sovereign nations,' each of which is entitled to use, or misuse, the transnational commons in whatever way it considers advantageous, unless it agrees voluntarily to forego some or all of these rights." [\[FN156\]](#) Thus, under the rule of consent, if the status quo is an implicit entitlement to emit, then the victims (that is, the beneficiaries of regulation) must try to purchase the entitlement at a price high enough to cover the emitters'

net costs of abatement. [FN157] (Some countries are both emitters and victims and hence may choose to participate in abatement without receiving side payments, but some countries--the cooperative losers--are emitters who do not see themselves as victims. It is this latter group that particularly must be paid to persuade it to participate in abatement.) Of the three ways for the victims to pay to secure participation by emitters--direct payment (subsidizing abatement), a tax-and-pay regime (paying emitters to persuade them to agree to a price constraint on emissions), or a cap-and-trade regime (assigning headroom tradeable allowances to persuade emitters to agree to a quantity constraint on emissions)--the last is the most "participation efficient." It secures participation with the least distortion (perversities of subsidies) arising from the payment to emitters, because its quantity constraint on emissions suppresses the effect of these distortions on environmental outcomes. [FN158]

c. Problems with Tradeable Allowances

Critics raised other issues to address in designing a system of international emissions trading. First, a system of tradeable allowances, like any market, faces the problem of "market power." [FN159] For example, a country could try to amass enough allowances to "corner the market" on emissions allowances, *1338 create an artificial shortage, and exert monopolistic market power. This is a particularly knotty problem at the international scale where there is no antitrust law and where large emitters like China or Russia might act as monopoly sellers of GHG allowances.

Second, a problem confronting a GHG allowance market, like any market, is transaction costs. [FN160] The costs of finding trading partners, negotiating deals, monitoring and enforcing performance, and insuring against non-performance can hinder efficient transactions. Formal allowance trading seeks to reduce transaction costs by making allowances fungible and by enforcing aggregate performance through national emissions reporting rather than through each individual trade. But informal allowance trading such as Joint Implementation (JI) and the Clean Development Mechanism (CDM) may face high transaction costs.

Third, some critics fear that negotiating the assignment of tradeable GHG emissions allowances would be so difficult that the system would never get off the ground. [FN161] But this concern applies to any treaty limiting emissions, because all forms of regulation allocate burdens among those regulated, and because all forms of regulation require a burden-sharing negotiation under the consent voting rule. The real question is the relative difficulty of negotiating the initial assignment using the alternative instruments. [FN162] In that context, tradeable allowances can ease the problem of initial negotiations. As Coase taught, the lower the impediments to subsequent reallocations of entitlements among the parties, the less the initial assignment matters. [FN163] Technology standards and fixed quantity limits provide no flexibility for subsequent reallocations of entitlements. Allowance trading makes post-agreement reallocations possible, making the initial allocations less binding. Thus authorizing allowance trading can be expected to substantially reduce the initial assignment impasse. Indeed that *1339 is what occurred in Kyoto; adding allowance trading made it easier for countries to agree on initial emissions limitations.

A fourth issue challenging a GHG market is compliance. Although compliance is a general problem of any treaty or national law, it figures prominently in criticisms of international environmental regulation. Compliance is more troublesome under the consent voting rule, where countries--even after agreeing to participate--cannot be compelled to comply. Rather, continuing desirability of participation must attract them into compliance. [FN164] Critics often charge that ensuring compliance with international emissions trading would be difficult. [FN165] Yet the problem of compliance is not unique to allowance trading; all regulatory instruments require monitoring and verification of national emissions reductions, and all require some form of enforcement against noncompliance. [FN166] The key question is the relative ability of the instruments to maintain compliance under consent. The criticisms of weak enforcement systems are really criticisms of the weak ability of the international system of consent to deal with any nation-states' noncompliance with any treaty obligations. Because compliance is costly and global benefits are non-excludable, countries have incentives to free ride; noncompliance is really just a partial version of free riding. Once free riding is overcome-- once countries are attracted to participate by the net gains they perceive-- then "compliance comes free of charge." [FN167] Thus there are good reasons to expect allowance trading to be superior to alternative regulatory instruments in inducing compliance. The lower abatement cost under allowance trading makes participation easier and greatly lowers the incentive to free ride. The assignment of headroom allowances attracts participation by erstwhile non-cooperators, and the prospect of continuing to sell allowances over time provides a strong discipline against temptations

to cheat. Useful enforcement tools added by a system of allowance trading include the ability to debit a violator's allowance account, [\[FN168\]](#) or exclude the violator from the allowance market. The tradeable *1340 allowance system is also likely to create domestic political constituencies within all countries--investors, trading industry members, and environmentalists--who would pressure their governments to comply with emissions limits so as not to have their allowances devalued or their market access hindered. [\[FN169\]](#)

Meanwhile, real compliance with (and more importantly, the actual effectiveness of) international GHG taxes and technology standards would be extremely difficult to ensure. In response to a GHG tax or technology standard, countries would have incentives to adjust their internal tax and subsidy policies to counteract the effect of the international GHG tax or technology requirement on domestic industries. This "fiscal cushioning" would in turn thwart the effect of the tax or technology standard on actual emissions, because the essential character of the tax is that it governs prices and not quantities (and technology standards do not necessarily affect actual emissions). [\[FN170\]](#) As a result, a country would be in technical compliance with the tax or technology standard, but its fiscal cushioning countermoves would vitiate the economic burden and environmental effectiveness of these instruments. It would be nearly impossible for international authorities to detect and, harder still, to block or penalize all of these detailed domestic fiscal games. Thus, an international GHG tax might accomplish very little. By contrast, the effectiveness of international allowance trading would be much simpler to monitor. Under a quantity instrument, participants need not monitor all the domestic evasive tactics being practiced in each country. Instead, they need only monitor the aggregate national emissions and compare them to the country's allowed total (its cap), and impose penalties for excessive emissions. This real effectiveness--as opposed to apparent compliance--would be much easier to monitor and enforce under global tradeable allowances than under a global tax or technology standard. [\[FN171\]](#)

Fifth, in addition to the costs and benefits of participation, ensuring fairness is also important to international treaty success. There has been concern that efficiency-enhancing policies such as emissions trading might be unfair to poorer *1341 communities and developing countries; [\[FN172\]](#) this is an important concern at the international level because wealth inequality is even more pronounced among the countries of the world than it is within them, and because fairness influences countries' decisions regarding consent. [\[FN173\]](#) Developing countries worry that global environmental law may be a form of "eco-imperialism." They want developed countries to "take the lead" in controlling GHG emissions. Developing country officials argued that it would be unfair to make poorer countries worse off by addressing a problem caused by and of primary concern to wealthier industrialized countries. [\[FN174\]](#)

Global tradeable allowances can be structured to achieve fairness for poorer societies by assigning them "headroom" in their initial allowance endowment. This would allow them to grow economically by emitting somewhat more GHGs (perhaps up to their business-as-usual forecast), or to earn substantial revenues from selling allowances to wealthier sources. This system benefits poorer societies by giving them a revenue stream--estimated by one study at \$10 billion per year initially and increasing over several decades to \$100 billion per year [\[FN175\]](#)--and by forcing richer countries to "take the lead" by financing global emissions reductions (in a way that is also economically preferable to them). The basic logic of voluntary exchange contracts (that is, market trading) means that allowance sales would not occur unless both parties were made better off by it. Indeed, demanding that industrialized countries control their emissions at home would actually be unfair to developing countries because it would deprive them of the allowance-sale revenue stream and of the receipt of efficient and clean foreign *1342 technology. It would be analogous to insisting that rich people must only spend their money in rich neighborhoods. [\[FN176\]](#)

Since the early 1990s, two other arguments have been advanced regarding the merits of international GHG emissions trading compared to GHG taxes. These are the impact of uncertainty on costs and benefits, [\[FN177\]](#) and the value of revenue recycling. [\[FN178\]](#) Both favor price-based instruments that raise revenue without setting quantity limits on emissions. [\[FN179\]](#) But neither differentiates emissions trading from fixed emissions limits (as long as the allowances and limits are initially assigned free of charge). Emissions taxes were not on the negotiating table in the late 1980s and early 1990s; thus the uncertainty and revenue-recycling issues were not relevant at that time. And there are good reasons not to consider emissions taxes at the international level. First, they would not encourage participation by developing countries (particularly the important "cooperative loser" countries). Indeed taxes would discourage participation even more than would fixed national emissions limits because countries would bear not only the cost of abatement but also the cost of the tax (its deadweight loss) on the residual unabated emissions. [\[FN180\]](#) Second, emissions taxes would be highly regressive and unfair. [\[FN181\]](#) Third, emissions taxes would be highly vulnerable *1343 to "fiscal cushioning"

as countries make subtle adjustments in their domestic tax and subsidy laws to shield their economies from the bite of the tax. [FN182] Fourth, if taxes must be accompanied by side payments to attract cooperative losers, the potential for revenue recycling would be curtailed or eliminated, and the side payments would tend to undermine the incentive effect of the tax. [FN183]

In sum, DOJ proposed the "comprehensive approach" and international emissions trading because these concepts offer significant advantages over the regulatory designs for GHG control that they replaced in the early 1990s. The comprehensive approach and emissions trading protect the environment more effectively, at a lower cost, with more equity, and with greater global participation. DOJ consciously borrowed these legal ideas from national environmental law.

III IMPLICATIONS

The experience of the climate treaties suggests that borrowing from national law into international treaties is significant—if not in frequency of occurrence, at least in salience. It also suggests that the positive and normative discourse on transnational or "horizontal" legal borrowing is often inapposite to the rather different question of trans-echelon or "vertical" borrowing. In this section, I suggest some initial steps in the positive and normative analysis of trans-echelon legal borrowing.

Alan Watson argues that transnational legal borrowing is frequent, fairly straightforward, and desirable. [FN184] In short, Watson says, lawyers borrow what they know. [FN185] A main *1344 constraint on horizontal legal borrowing is that lawyers in one country may not know about relevant laws in other countries. [FN186] But where they can borrow, Watson suggests they will, and will "look for (or even invent) a precedent in a respected [foreign legal] system to bolster his opinion." [FN187]

Trans-echelon legal borrowing differs from trans-national legal borrowing. Strong institutional pressures militate against basing international law on national law ideas and against being candid when such borrowing does occur. Further, international lawmaking is a multi-level game. [FN188] Creating international law involves not just the law drafting process that Watson describes, but also the multiparty negotiations at intergovernmental treaty talks, the multipolar domestic political system of each country (including the complex power structure of each country's government—such as separations of powers among branches, committees, and agencies; competing political parties; and federal-state relations), the role of non-governmental organizations, and the interests of numerous domestic political constituencies.

As a positive (historical and predictive) matter, the example of the climate treaties indicates how easy it can be for borrowing from national into international law to go unaccomplished, or at least unnoticed. As a normative matter, the example of the climate treaties suggests that vertical borrowing from national into international law is desirable when it uses national-level learning about regulatory instruments to provide global public goods. Vertical borrowing, however, can also fall prey to the important differences between national and international legal systems. Global environmental law should be less insulated from national law ideas, but national law ideas should be *1345 transplanted only with a clear understanding of the very different parameters of international law. These different parameters also imply a different analysis of the evolution of international legal rules, and in turn shed fresh light on the debate over the evolution of national legal rules.

A. Positive Analysis

What factors affect the likelihood that international environmental law will borrow from national law? As noted at the outset, several factors tend to inhibit such vertical or trans-echelon legal borrowing.

First, international law has long been seen as separate from national law. Practitioners and scholars of international law have been trained to see their field as distinct from national law and to take pride in that separation. [FN189] In their daily work, these practitioners and scholars have many opportunities to study prior international law but few

opportunities to study analogous national law ideas. Thus, for the busy foreign ministry lawyer or diplomat, the costs of searching for and borrowing from national law can seem high. If Alan Watson is correct that legal borrowing boils down to "lawyers borrow what they know," and if international lawyers are not familiar with the substantive national law of the topic being addressed in a new treaty, then trans-echelon borrowing will seldom occur. In the climate treaty negotiations, diplomats looked to precedents in prior public international law, not in domestic national law. [FN190] The diplomats and international lawyers were often unfamiliar with domestic environmental law, and many of the diplomats were not lawyers or environmental policy experts. Further, even many domestic environmental officials were not familiar with innovations such as emissions trading. [FN191] That unfamiliarity made it doubly *1346 difficult for the U.S. to persuade other countries of the case for adopting international emissions trading in the climate treaties. It would have been much easier to accomplish the trans-echelon legal borrowing of emissions trading if there had been more national law examples of emissions trading in a greater number of countries at the time the climate treaties were negotiated. Trans-echelon legal borrowing may thus be less likely than transnational borrowing, because trans-echelon borrowing must often jump both the trans-echelon knowledge hurdle (are international lawyers and diplomats familiar with national law?) and the transnational knowledge hurdle (are lawyers and diplomats in one country familiar with law in other countries?).

Second, the practitioners of international law have some incentive to keep their craft insulated from their own nation-state governments. Although the foreign ministry ostensibly represents its national government, it is an agent in a principal-agent relationship; and like any agent, it has incentives to develop private information so that the principal relies upon the agent. Just as the legal profession (or medical profession, or any guild) as a whole has economic incentives to keep its craft technical and obscure to the pool of potential clients, so foreign ministries have incentives to keep international law inscrutable to and impenetrable by their clients (that is, the other branches of their home government). This provides the foreign ministry with latitude and leverage--and consequently, maintains a captive market for its services. Monopoly over the legal aspects of treaty negotiations may be particularly important to the foreign ministry because it is that monopoly which clearly defines the foreign ministry's special niche and authority among the executive departments. (Similarly, the justice ministry works to maintain its monopoly over the representation of the national government in the domestic courts.) Thus the U.S. Department of State has an institutional incentive to fend off other agencies, especially the DOJ and the White House Counsel, which try to contribute substantive legal ideas to international treaty negotiations. [FN192] To be sure, the foreign ministry is usually more *1347 expert in international law than the other agencies and should have the lead role in treaty negotiations. But the incentives for defending that turf can be excessive, especially where a good legal idea from national law would improve the treaty.

At the extreme, foreign ministries, like any agents, may represent their own interests rather than the interests of their principals. Diplomats are frequently suspected of representing the views of the international community to their home governments, instead of the other way around. One White House official used to quip, "all the State Department needs is a U.S. desk." These agency incentives do not preclude the possibility of the foreign ministry opting to borrow a national law idea, but they raise obstacles to such borrowing by inhibiting dialogue between the foreign and domestic ministries and by creating a significant "not invented here" barrier to other agencies contributing legal ideas to international treaties.

The specific legal concepts advanced by DOJ may have aggravated these conflicts between the foreign ministry and the rest of the government. Agencies often have incentives to expand their workload, budget, and opportunities for credit claiming. [FN193] Foreign ministries may have incentives to proliferate treaties, negotiating sessions, and fora. (This is similar to the incentive of legislators to proliferate bills, committees, and subcommittees.) Thus, the plan to negotiate multiple protocols to the initial climate convention, each addressing a separate gas or sector, can be seen as serving the parochial interests of foreign ministries. DOJ's comprehensive approach cut against these interests by integrating all of these issues into one regulatory basket. This may explain some of the State Department's initial reluctance to accept the comprehensive approach. It may also explain why some White House officials who feared the *1348 comprehensive approach as a recipe for action nonetheless supported it as a way to rein in the State Department. [FN194]

Meanwhile, DOJ's proposal for emissions trading would take the power to distribute significant official financial assistance out of the hands of foreign ministries and their development agencies, and place that function in the hands of private market actors. This shift in power could help explain many foreign ministries' expressed opposition to emissions trading (and their preference for government-to-government financial transfers), even if emissions trading

would be more beneficial to their societies as a whole. [\[FN195\]](#) The economics ministries of those countries might well prefer emissions trading. Thus, the multi-level game of international treaty-making can cut against or in favor of borrowing from national law, depending on the internal power struggle among the different agencies of the national government. [\[FN196\]](#)

Third, even if borrowing from national law into international law does occur, there may be reluctance all around to advertise this fact. Alan Watson asserts that legal borrowing is usually advertised by the borrowing country, [\[FN197\]](#) but that feature of transnational borrowing seems inapposite to trans-echelon borrowing. Visible trans-echelon borrowing might taint the international document as exhibiting favoritism to the nation-state from which the idea was borrowed. Such a taint may be more appearance than reality; although the borrowed idea might favor its source, it could just as easily deliver a better (more cost-effective and equitable) result to all concerned. But the mere fear of the appearance of favoritism encourages silence regarding trans-echelon borrowing. [\[FN198\]](#) Further, the pride of international ¹³⁴⁹lawyers and legal scholars in their discipline, viewed as distinct from and morally superior to national law, [\[FN199\]](#) discourages candor when international law borrows ideas from national law. As I noted at the outset of this Article, the fact of legal borrowing from national into international law seems to have been suppressed in both the scholarly literature and the world of practical diplomacy.

In this context, trans-echelon borrowing does not occur just because the lawyers in Geneva "borrow what they know" from national law. Instead, trans-echelon borrowing often requires more--the entrepreneurial efforts of proactive borrowers--change agents who navigate the institutional obstacles described above in order to bring a national law idea into an international treaty. Such legal entrepreneurs are the vertical borrowing counterparts of the elites described by Alan Watson and Max Rheinstein as crucial to horizontal legal borrowing. [\[FN200\]](#) These entrepreneurial borrowers are likely to be outsiders to the standard power structure. Obvious candidates are NGOs, which can act not only as agenda-setting lobbyists and monitors of compliance, [\[FN201\]](#) but also as sources of new policy ideas and conduits of useful information. One should not romanticize NGOs; they are special interest advocacy groups, not democratically elected public representatives. But they can still serve highly constructive roles. In the climate policy debates, many NGOs played important roles regarding the comprehensive approach, and especially emissions trading; the most significant contributions were from EDF. Without EDF (particularly Dan Dudek and Joe Goffman), it is unlikely that emissions trading would have been adopted in either the 1990 CAA acid rain title ¹³⁵⁰ or the climate treaties. EDF played a major role in charting how emissions trading should be applied to these problems and in conferring deserved environmental legitimacy on what had earlier been an idea associated with academic economists.

A second group of candidates for entrepreneurial borrowers are academics who serve in or advise government. Several of the key players who made the comprehensive approach and emissions trading part of official climate policy were professors who were serving as public officials in the field in which they were among the world's most eminent experts. [\[FN202\]](#) These academics are uniquely situated and equipped to inject the best ideas into policymaking and to cut through the bureaucratic barriers that otherwise divide international law from national law. In this sense, these NGOs and academics-in-government play a role as "transaction cost engineers" surmounting organizational obstacles to create new productive value. [\[FN203\]](#) This is creative Schumpeterian entrepreneurship [\[FN204\]](#) in the public sector.

Despite the obstacles confronting trans-echelon borrowing, more of it will occur as part of the broader processes of globalization. A more globally integrated economy means increased interactions across national borders, both increasing interest in harmonizing international rules, and increasing opportunities to become familiar with other nations' rules, thereby decreasing the cost of borrowing. Examples include new international rules for intellectual property law, securities law, and antitrust law, all based on borrowed national law. A more globally integrated culture means globally shared values that support new international rules, sometimes borrowed from national law. Examples include new international human rights law and criminal law. Most importantly, the advent of global externalities and public goods--globally shared losses or gains from which no one can be excluded, such as stratospheric ozone depletion and climate change--means an increasing need not only for new international regimes, but also for legal rules drawn from analogous circumstances: not regulation of the border interface, but regulation of the shared ecological system. These analogs are more likely to be found in substantive national ¹³⁵¹ environmental law (governing shared airsheds, watersheds, and other public goods) than in prior international law (governing cross-border trade and other interjurisdictional issues). Moreover, the protection of these global public goods is likely to make environmental law a leading edge of the wave of borrowing from national into international law.

B. Normative Analysis

Trans-echelon legal borrowing is thus occurring and likely to accelerate, even as it faces significant hurdles. Whether or not trans-echelon legal borrowing is normatively desirable is a different question. The comparative law literature is divided on the propriety of horizontal legal borrowing. [\[FN205\]](#) Meanwhile, a prominent theory of the evolution of law mixes the positive and the normative by asserting that law predictably evolves in the direction of more efficient rules. In this "efficient evolution" hypothesis, as the benefits of controlling externalities come to exceed the costs of internalizing these externalities, new legal rules arise to perform that function. [\[FN206\]](#) For example, if a shared environmental resource is being overdepleted and underconserved (the "tragedy of the commons" [\[FN207\]](#))-- because transaction costs, including the costs of binding free riders, frustrate cooperation--then property rights or other regulatory regimes will be adopted when the benefits of restricting resource use come to exceed the costs of doing so. At first glance, this efficient evolution theory is attractive, and it seems highly relevant to international law, where there is no coercive state to mandate new legal rules. New global law must arise from Pareto- improving cooperation, much as in the unorganized local settings that are the staple of the Demsetzian efficient evolution theory. [\[FN208\]](#)

At a deeper level, however, the efficient evolution hypothesis is puzzling. If the parties could not cooperate on use of the ***1352** resource itself (hence overdepletion), how did they manage to cooperate on the adoption of the legal rule? [\[FN209\]](#) This is the paradox of Blackstone and Demsetz.

One answer might be that although each short-term interaction taken alone might be non-cooperative, through repeated interactions (and the prospect of repeated interactions in the future) the parties gradually develop the legal rule as a shared social norm. [\[FN210\]](#) Still, this leaves the process of transition murky, and possibly too slow.

A second answer might be that the parties could not agree to cooperate on each resource, but they could agree to cooperate on a broad legal system addressing diverse multiple resources. [\[FN211\]](#) This helps explain the emergence of the entire legal system, but not of discrete individual rules for particular topics. And again it leaves the process of evolution murky, seemingly all-or-nothing.

Perhaps a different (third) answer to this puzzle of efficient evolution, suggested by the present analysis of trans-echelon borrowing, is that it is legal entrepreneurs who overcome the transaction costs contributing to non-cooperation, by introducing a new legal idea--an idea that solves the commons problem with lower costs of adoption in a way the parties to the commons had not previously conceived. That is, the legal entrepreneurs offer an innovation--quite likely borrowed from somewhere else--of which the parties to the dysfunctional system were unaware. This conception brings together Demsetz's evolution theory with Watson's model of legal borrowing through the kind of entrepreneurship envisioned by Schumpeter and Williamson. It gives NGOs and academics-in-government, among others, a constructive role to play in transplanting efficient legal ideas across echelons. These legal entrepreneurs are presumably motivated by the chance to appropriate some gains from the borrowing transaction, though the kinds of gains they seek--such as professional esteem--may not detract from the value they confer.

***1353** The literature advocating legal borrowing does not, however, espouse the efficient evolution hypothesis. Alan Watson argues that "law is largely autonomous," [\[FN212\]](#) not responsive to social needs. He says

It goes without saying that practical utility is the basis for much of a reception of law. It is simply economically efficient to borrow: often not, I should like to stress, for the borrowing state as a whole or for its ruling elite, but certainly for the lawmaker who is saved the awful labor of thought. [\[FN213\]](#) And, Watson states, "legal rules by no means accurately reflect the needs and desires of society and its ruling elite . . . a considerable disharmony tends to exist between the 'best' rule that society envisages for itself and the rule that it has." [\[FN214\]](#) Further, he argues, "in large measure law does not emerge in any real sense from a society in which it operates." [\[FN215\]](#) Most firmly, he argues: "even in theory there is no simple correlation between a society and its law. There is no equivalent of the 'invisible hand' of economics that under perfect conditions would keep a balance between supply and demand." [\[FN216\]](#) By contrast, Watson's adversaries counsel against legal borrowing, on the ground that law must serve a society's particular needs. [\[FN217\]](#) They fear that legal borrowing will neglect differences in culture, politics, institutions, social systems, economics, and other factors and thus will import inappropriate legal rules into the receiving state. [\[FN218\]](#)

*1354 Perhaps the ambivalence of the legal borrowing scholars about efficiency derives from a failure to specify the underlying lawmaking framework in the receiving polity. Whether borrowing is efficient may depend on the criteria for adopting new law in the receiving state. By contrast, if the receiving polity is a dictatorship, then presumably much of its law will be inefficient (satisfying the dictator but not the people), whether that law is borrowed or home-grown. If the receiving polity operates on a unanimity voting rule, then any law adopted must be Pareto-improving, again whether borrowed or home-grown. [\[FN219\]](#)

From that perspective, the efficient evolution hypothesis seems more relevant to international law (and hence to trans-echelon borrowing into international law) than to national law (and transnational borrowing) because international law operates on a voting rule of consent. No country need agree to a treaty unless it finds the treaty provisions in its interests. Thus at least in theory, trans-echelon legal borrowing must offer efficient outcomes, or fail to become law. In the climate policy context, a country would not have agreed to adopt a legal concept that made it worse off than declining to join the treaty. As a result, the underlying legal framework of international treaty law implies that trans-echelon legal borrowing is highly likely to be efficient--even if not all international law is efficient. [\[FN220\]](#)

Watson's analysis of "autonomous" legal borrowing relates to a system in which "law is created primarily by jurists, not by *1355 legislation or by judges . . . [and these jurists] are largely independent of government, not state employees." [\[FN221\]](#) That is not a description of international environmental law made by treaty negotiations. The view that Watson sketches (and his opponents accept) of legal borrowing as "autonomous," independent of social efficiency, and imposed by undemocratic jurists, does not correspond to the consent-based multiparty nation-state negotiations that produce treaty law.

It might, however, correspond to a fourth potential answer to the puzzle of efficient evolution of law: namely, that law does not evolve to be efficient, but rather is imposed by the powerful to serve their own parochial interests. One need not imagine dictatorship to grasp this grim view. At the national level, this view is substantiated when special interests dominate politics and distort democratic legislation. [\[FN222\]](#) At the international level, this is the view that superpower hegemony imposes legal rules on less powerful nations. [\[FN223\]](#) If so, countries might have agreed to borrow legal ideas from a superpower not because the legal ideas made the countries better off, but because the superpower could not be denied. Slaughter's study of the design of the U.N. administrative system by U.S. lawyers just after World War II might fit this model. [\[FN224\]](#) In the climate treaty negotiations, there is little evidence that the U.S. employed coercive pressure to obtain adoption of its legal ideas. Indeed the U.S. was widely perceived as on the defensive through much of the negotiations, with the EU, the Association of Small Island States (AOSIS), and numerous NGOs on the offensive. Of course the U.S. could hold out, refusing to agree unless the treaty seemed worth signing; but that is the prerogative of any state under the consent system *1356 of international law. That the U.S. accounted for a large share of global GHG emissions made it an essential party to any successful treaty and hence gave it leverage. But the United States often took the public heat for positions on which many other countries, including Russia, Canada, Australia, and Japan, all agreed. These types of tough bargaining are not the kind of coercive imposition of law that the skeptics of efficient evolution have in mind. All the countries still had to agree to whatever any other country proposed.

Unlike legal rules adopted in a dictatorship or majority-vote legislature, where the powerful can coerce dissenters, at the international level the treaty rules adopted could not bind a dissenting party. In short, whatever the possibilities for the use of power to make law, trans-echelon legal borrowing into international treaty law is decidedly less likely to be coercive (and hence more likely to be Pareto-efficient) than is transnational legal borrowing. [\[FN225\]](#) Watson's view of autonomous legal borrowing by elites, however accurate it may be at the national (horizontal) level, is not readily applicable to high-stakes negotiations on global regulatory treaties.

This does not necessarily mean that any particular act of trans-echelon legal borrowing was in fact efficient. Such a judgment requires a comparison to the alternative policies that might have been adopted, as DOJ argued, and a retrospective analysis of the policy in operation (which cannot yet be undertaken for the climate treaties). In fact, it is sometimes hard to tell whether a policy choice is even an act of legal borrowing; as Watson says, "It is a myth to think that . . . every parallel is a provenance." [\[FN226\]](#) Similarity might be coincidence. He elaborates:

For a sound explanation of the causes of change in any branch of the law at any time . . . it is necessary to consider both the antecedents of the law and any other legal system which may have been influential, and also to examine (for patterns of similarity or difference in change) the same branch of the law in other legal systems which were subject to

different economic, social and political conditions. [FN227] For international law we cannot examine "the same branch of the law in other legal systems" under different conditions, because we have only one international law on this planet--only *1357 one Earth. We have no database for a cross-sectional empiricism of international law. To follow Watson's teaching, we would somehow need to look at other planets also facing climate change and evaluate how their legal systems responded in comparison to our own. In the climate treaties, we do have first-hand testimony of the fact of conscious borrowing. That can answer the question of whether the legal ideas were borrowed. But it cannot definitively prove the actual efficiency of these legal ideas; for that, we still lack the ability to compare the choices made on Earth to alternative scenarios in operation on some other planet. We can only imagine the counterfactual.

The experience of the climate treaties helps us reorient the normative debate over legal borrowing to make sense of the trans-echelon context. Skeptics of transnational borrowing--such as Kahn-Freund--argue that it must overcome significant differences in national culture, geography, wealth, religion, political system, economic system, distribution of power, interest group pressures, and norms. [FN228] Even Watson, an enthusiast of fluid and fruitful transnational borrowing, [FN229] identifies nine factors for the success of transnational borrowing: Pressure Force, Opposition Force, Transplant Bias, Discretion Factor, Generality Factor, Societal Inertia, Felt- Needs, Source of Law, and Law-Shaping Lawyers. [FN230] Watson is ambivalent about whether knowledge of or similarity to the political-legal system of the donor state is important for successful borrowing. [FN231] Some of *1358 these factors are plainly relevant at the international level: Pressure and Opposition Forces (for example, particular national governments, government agencies, industries, environmental groups, and also industry subgroups which might benefit from regulation); Transplant Bias (anxiety about any visible transplant because of the appearance of favoritism, especially if from a powerful party); Felt-Needs (the net benefits of the new legal idea); and Law-Shaping Lawyers (the entrepreneurial borrowers/change agents discussed above, such as NGOs and academics-in-government). But other factors are largely inapposite to trans-echelon borrowing. Borrowing from national into international law cannot be judged on the same criteria advanced by comparative law scholars to evaluate transnational borrowing. The domain of international law is not a place-based national legal culture. It does not have the local geography, local culture, local economy, or other features of local exceptionalism that make transnational borrowing so dicey. [FN232] Indeed, the international level exhibits the simultaneous representation of all national cultures and systems, thus posing a potential obstacle, but equally, an open invitation to legal borrowing.

Meanwhile, contrary to Watson's view that borrowing can succeed oblivious to the political-legal systems involved, international law is a decidedly different political-legal system from national law, a difference which does matter to the success of trans-echelon legal borrowing. There are reasons to be cautious about borrowing national law into international law, but these reasons are quite different from the factors enumerated to caution against transnational borrowing. National law should not be transplanted willy- nilly into international law, because among other things, much national law is flawed, but more fundamentally because even national successes may not be appropriate models for international regimes. The international arena is different from the national setting, not only because of the diversity of cultures and viewpoints represented at the international level, but structurally, because of the very different voting rule employed for the adoption of law. Whereas national law operates on a legal framework of majority rule, international law operates on a legal framework of consent; and that can make *1359 all the difference. [FN233] With this key difference in mind, national successes (and national failures) can furnish essential inputs to the design of international treaties.

For the general theory of the efficient evolution of law, the key point is that institutions matter. The solution to the paradox of Blackstone's enigmatic "Necessity beget property" and Demsetz's rosy efficient evolution is that legal rules do not just "arise"; they must be adopted by institutions. Legal evolution will be more efficient when the legal framework and structure, such as the voting rule, is more conducive to Pareto-improving outcomes. Judicial adoption of legal rules may be inefficient because judges have high information costs, become path-dependent on prior judicial decisions, and do not have strong incentives to adopt Pareto-improving rules. [FN234] Legislative adoption of rules may be inefficient because it reflects the power of special interests to seek rents through majoritarian coercion. [FN235] International adoption of legal rules, while subject to hegemonic power, is more likely to be Pareto-efficient than legislative or judicial adoption of rules, precisely because of the consent-based voting rule for international treaty law. [FN236]

At the same time, borrowing from national environmental law into international environmental law may be crucial to the substantive success of international environmental law. In contrast to those public international lawyers and

diplomats who see international environmental law as simply the extension of generic principles of public international law to govern another area of international relations, trans-echelon borrowers see international environmental law as the challenge of applying the substantive insights and instruments of environmental law to a new set of environmental problems at the global level. If it does not make use of these substantive environmental law design features, international environmental law may prove ineffective and inefficient. Had the climate treaties adopted a piecemeal, narrow, and rigid regulatory regime, they would have been far more costly, far less environmentally effective, and far less able *1360 to attract participation by countries. The legal borrowing of the comprehensive approach and emissions trading accomplished in the climate treaties enabled much progress to be made on all of these fronts (cost, environmental effectiveness, and participation). It did confront some barriers of legal culture--that these ideas were less familiar to international diplomats than to national environmental lawyers, and less familiar to other countries than to the United States, Norway, New Zealand, and a few others--but that problem was largely overcome by extensive dialogue, explanation, and willingness to adapt the ideas to the climate context. [FN237] Still, this vertical legal borrowing failed to engage participation by China and other developing countries, at least so far. This failure is serious, and relates to the failure to adapt the legal concepts to the international legal system, as discussed below.

C. Cost-Benefit Analysis of Trans-Echelon Borrowing

At a first approximation, trans-echelon borrowing by international law from national law seems desirable when its benefits justify its costs. The benefits of such borrowing are likely to rise in certain kinds of cases. First, as the problem to be addressed becomes more holistically global and less confined to the movement of trade or armies across borders--more of a global public good rather than a series of interface disputes across national borders--the value of looking to national law analogs will increase. Climate change and stratospheric ozone depletion are global externality problems, not transnational trade problems. [FN238] Global warming and stratospheric ozone depletion would occur from GHG and CFC emissions, respectively, regardless of whether any of the products involved in these emissions--fuels, electricity, manufactured goods, refrigerants, and so on--ever crossed national borders. These problems involve widespread externalities and risks and require collective action to produce global public goods. They are in this *1361 respect more similar to those addressed by much national environmental law, and less similar to those traditionally addressed by international law (such as trade disputes, migration, or war). Thus, the ideas borne of national law--comprehensiveness and emissions trading--were likely to be more applicable to these global (not transnational) environmental problems. By contrast, problems such as hazardous waste exports (covered by the Basel Convention) and trade in endangered species (covered by CITES) relate to interjurisdictional trade in products. They require legal rules for the jurisdictional interface, akin to international trade law. These problems may not have equally strong analogs in national environmental regulatory law, except where national law itself governs a federation of jurisdictions and addresses the movement of items across those internal borders. [FN239]

Second, the benefits of trans-echelon borrowing are likely to rise as countries have had more time to test the actual performance of different legal ideas. This was a weakness of borrowing comprehensiveness and emissions trading in 1989, when the former had rarely been implemented and the latter had been implemented in only a few cases. Although DOJ demonstrated some practical experience with these ideas, [FN240] the case would have been far stronger with a few more examples to study over a broader geographic and temporal range.

Third, the benefits of legal borrowing from national law into international law are likely to rise as the problem becomes more complex. In a federal system, where both member states and the central federal government can research and develop regulatory designs, borrowing federal law from subsidiary jurisdictions becomes less beneficial both as the problem becomes especially complex (such that centralized analysis offers economies of scale), and as the problem becomes especially simple (such that the solution is obvious). Problems of intermediate complexity are the ones best suited to borrowing centralized solutions from *1362 initially decentralized development efforts. [FN241] At the global level, however, there is no real "center" to capture the economies of scale in the development and analysis of regulatory ideas. There is no global regulatory administrative apparatus capable of performing the needed scientific, economic, and legal research. [FN242] As a result, at the global level, increasing complexity will generally warrant increasing borrowing from subsidiary jurisdictions that are better equipped to perform these analytic functions. Because climate change is one of the most complex environmental problems ever encountered, borrowing from national law approaches is likely to be highly desirable.

Meanwhile, the costs of trans-echelon legal borrowing are likely to decrease as national experience accumulates and hence knowledge of how to make the legal idea succeed is more readily obtainable. This is the familiar story of the "laboratory" of legal experimentation in subsidiary jurisdictions. It is also likely to decline as the role of entrepreneurial borrowers grows. These change agents, including NGOs and academics-in-government, can perform the functions of searching for and analyzing national law--functions that are costly for international lawyers and diplomats to undertake. And the costs of trans-echelon legal borrowing are likely to decline as more countries--and their diplomats and international law scholars--become familiar with the legal ideas being employed in national law.

D. Flaws of Vertical Borrowing in the Kyoto Protocol

At the same time, as emphasized above, international law is different from national law; this difference must be accounted for in any legal borrowing from national into international law. The Kyoto Protocol's major flaw may be that it borrowed emissions trading from national examples too readily, without sufficient attention to the rather different problem of securing participation at the international level. On the bright side, the Kyoto Protocol authorized emissions trading (in Article 17) in order to achieve cost-effectiveness, rather than adopting the fixed emissions *1363 limits that some countries had urged. By allocating the burden of emissions reductions among nations roughly in proportion to national wealth, which as discussed earlier is a rough proxy for national perceived benefits of climate protection, the Kyoto Protocol made use of allowance allocations to secure participation. Further, it assigned "headroom" allowances to Russia and the Ukraine--a move that some observers have criticized as ineptitude and dubbed "hot air," but which can be better understood as a very rational form of compensation to secure those two countries' participation in the treaty. Russia's agreeing to adopt emissions controls was by no means guaranteed, and without headroom allowances it might well have stayed out of the treaty (and invited significant leakage).

But this cap-and-trade regime is only a half-step in the right direction, because the Kyoto Protocol omits the developing countries. China, India, Brazil, Indonesia, and other large developing countries are not obligated to limit their emissions under the treaty. Their growing emissions will render the treaty increasingly ineffective. The prospects for emissions leakage from capped industrialized countries to uncapped developing countries are rampant, and this prospect moved the U.S. Senate to pass the Byrd-Hagel resolution threatening to vote the Protocol down.

The basis of this deep flaw in the Kyoto Protocol is the failure to understand how the different voting rule in force at the international level affects the design of regulatory law. Under majority rule, a cap-and-trade system could be imposed on the entire nation without the polluting states' consent, and that is just what happened in the 1990 Clean Air Act acid rain title. But under the consent voting rule for international treaties, the developing countries cannot be regulated against their will; they will require side payments to attract their participation. [FN243] Although the Kyoto Protocol took this step for Russia, it failed to offer headroom allowances to the major developing countries in return for their agreement to participate in the cap-and-trade system.

The Kyoto Protocol tried to address developing country abatement by introducing the Clean Development Mechanism *1364 (CDM), created in Article 12, through which industrialized country sources could purchase emissions reduction credits from developing countries. The CDM does promise significant abatement at low cost, as well as the possibility of introducing lower-emitting technologies into developing countries before they become dependent on high-emissions growth paths. These are important advantages.

The CDM could, however, prove to have a perverse impact on global emissions, and could undermine future efforts to bring developing countries into the cap- and-trade regime. First, because CDM seller countries are not subject to national quantity caps, the CDM transactions amount to pure subsidies for abatement. As discussed earlier, this regulatory instrument is disfavored because it creates incentives for the emitting industry to grow and could even increase net emissions. [FN244] By reducing the relative cost of operating emitting enterprises in developing countries, the CDM will attract investment to those industries (accelerate leakage) and thus could be of limited effectiveness or could even expand total emissions. Moreover, because there are no national quantity caps on developing countries, CDM abatement investments might be offset by unseen increases in emissions elsewhere in the same country.

Second, the opportunity to sell CDM credits could discourage uncapped developing countries from joining the cap

regime. If it is the prospect of selling headroom allowances that provides the pivotal incentive for cooperative-loser developing countries to participate in the cap-and-trade system, and if those countries can earn just as much by selling CDM credits outside of a cap, then why should they accept caps? If they do not accept caps, increased net leakage may render the entire treaty futile or worse. One way to address this problem would be to discount CDM credits (or "certify" them at less than the claimed tons of abatement) to reflect their lesser effectiveness in achieving global abatement. This would lower their attractiveness and push more countries toward agreeing to caps in order to take advantage of more lucrative formal trading. [\[FN245\]](#)

***1365** Third, the CDM may be a battleground for political and market power. It is constituted under Article 12 as a discrete entity governed by an executive board. This apparently centralized organization could exert control over the market in CDM credits.

Thus, the Kyoto Protocol makes some progress in the use of allowance trading to secure efficient participation, but crucially fails to engage developing countries in the cap-and-trade system. To be environmentally effective, the Kyoto Protocol ought to be renegotiated or supplemented to include the major developing countries in the cap-and-trade system on terms beneficial to all, through the assignment of headroom allowances. [\[FN246\]](#) This approach would combine the benefits of legal borrowing from national environmental law, with the requisite adaptation to the distinct underlying legal framework of international environmental law.

CONCLUSION

Environmental law is special; it is not just a subset of public international law (nor of administrative law). [\[FN247\]](#) Environmental law deals with special problems of ecological and economic interconnectedness and hence with the ubiquitous side effects of any intervention. [\[FN248\]](#) It deals with long time horizons and complex and uncertain risks, with shared externalities and diverse sources, and with hard tradeoffs between competing values.

At the same time, although environmental law is often viewed as a "specialty" field of legal education and scholarship, the very characteristics that make it "special" also make it more "general" than much mainstream law. Whereas constitutional ***1366** law, criminal law, contracts and commercial law, and other mainstream fields of law deal only with human-human interactions, environmental law deals with interactions among humans and the other several million species on the planet, in complex interconnected systems, over long time horizons. Because human systems are nested within larger and more diverse ecological systems, environmental law in a very real sense embraces all other areas of law.

Environmental law has developed an extensive body of experiments and experience with alternative legal measures to respond to its special challenges. International environmental law should pay heed; it should look to national environmental law for valuable legal concepts that can be borrowed into international treaties. Even though the problem of global environmental degradation can be seen as a failure of national institutions, it is a failure of national boundaries rather than of the legal ideas employed in national regulation. National law should say to international law: "do as we've learned, not as we've done." [\[FN249\]](#) Many of the creative legal ideas in national environmental law are ripe for borrowing into international environmental law. The comprehensive approach and emissions trading, described here, are two such legal ideas. [\[FN250\]](#) International institutions should move beyond serendipitous vertical borrowing to engage in a systemic inventory and evaluation of the national law ideas--and experiences of success and failure--available worldwide, in both large and small countries. [\[FN251\]](#)

***1367** Meanwhile, international law is real law. It is just law based on a different voting rule and institutional framework than that of national law. [\[FN252\]](#) National environmental law should pay heed; it should glean insights from the study of international law, [\[FN253\]](#) such as the use of side payments embedded in emissions trading systems to secure efficient participation in lawmaking coalitions. [\[FN254\]](#) In this recursive system, reciprocal trans-echelon borrowing can strengthen the effectiveness and efficiency of environmental law at both the national and international levels. Just as state (provincial) experimentation prior to national adoption can be useful in a federal republic's "laboratory of democracy," [\[FN255\]](#) so too can conscious examination of nation-state experimentation, followed by selective borrowing into international treaties (and then further adaptation of the national law idea), give rise to a

productive global "laboratory of regulatory design." For example, although many countries' government officials were evidently unfamiliar with emissions trading before the climate treaty negotiations, the advocacy of emissions trading by the US, Norway, and others in these treaty talks, and the attention directed to national law applications of allowance trading in the US, New Zealand, and elsewhere, may now encourage other countries to adopt emissions trading domestically (for GHGs or for other pollution problems). There are now signs that several countries, including the EU and Kazakhstan, are moving toward the use of domestic emissions trading systems. [FN256] National law can adopt "comprehensive *1368 approaches" to a variety of complex multi-pollutant, multi-risk, multi-sector problems. [FN257]

Such a process of reciprocal social learning [FN258] requires communication, or at least information. Agencies responsible for national environmental law and international environmental law should communicate with each other, share ideas, and work collaboratively to solve common problems. After a slightly rocky start, this kind of fruitful collaboration between colleagues at the Justice and State Departments, EPA, and throughout the executive branch, facilitated the borrowing of useful ideas from national regulatory law into the global climate treaties.

Similarly, students of international law should seek training in substantive environmental law, and vice versa. There is a major role for law schools in this process. Alan Watson points to the "enormous influence of legal education for legal attitudes" [FN259] and concludes that "if borrowing is the main way law develops, and if the lawmaking elite is bound by its legal culture, and if this culture is restricted by what the elite does not know, then it follows that the quality of legal education . . . plays a powerful role in law reform." [FN260] Just as law schools in the early twentieth century prepared students for (and helped pave the way toward) the national markets and national law of the New Deal by teaching a national law curriculum, [FN261] so law schools in the early twenty-first century can prepare students for the global markets and global law of our era by teaching a curriculum that integrates rather than divides national and international law. Instead of teaching international law as a separate subject (though without abandoning that part of the curriculum), global dimensions can be addressed in virtually every course in the catalogue. We can train our students to be conscious and wise legal borrowers--entrepreneurs who bring creative new ideas from one area and echelon of the law to another.

As noted in Part I, there are probably many more examples of international law borrowing vertically from national law than we have confessed and analyzed to date. I do not claim that all of *1369 these borrowings are normatively desirable. I only point out that this phenomenon of trans-echelon borrowing has been relatively neglected by the literature on legal borrowing, and perhaps by international law scholars and practitioners as well. The present Article is an attempt to analyze trans-echelon legal borrowing and to distinguish its positive and normative characteristics from those of transnational borrowing.

This Article also suggests that legal borrowing will be crucial to the new frontier of global environmental law, as well as to improving national environmental law. Because global environmental law deals with shared externalities and holistic risksheds, it is more akin to substantive national environmental law than to international trade law. Climate change, stratospheric ozone depletion, biodiversity loss, and similar problems will require understanding of the regulatory lessons of national environmental law. Two of these lessons, the comprehensive approach and emissions trading, were consciously borrowed from the national law experience and introduced into international environmental law, a development to which the climate treaties owe their fundamental design. But, because international treaty law is based on consent, its regulatory design cannot be identical to that of national environmental law. We cannot just transplant regulatory law wholesale from the national to the international level: we must adapt regulation to the different legal context of international treaties. [FN262] As Alan Watson emphasizes, "the time of reception [of a legal idea] is often a time when the provision is looked at closely, hence a time when law can be reformed or made more sophisticated." [FN263] We should engage in vertical legal borrowing intelligently, leaving the legal rules better than we found them. Meanwhile, as observers attempting to model the efficient evolution of law, we should recognize that institutions matter. In particular, unlike coercive autocratic or majoritarian legal systems, consent-based international regulatory systems must attract participation efficiently.

Lurking in my story of legal borrowing for the climate change treaties is an entertaining irony. The legal ideas we borrowed were devices to develop a system of global "regulatory *1370 property," [FN264] in order to restrict access to the global commons. The problem was open access; our solution was a system of transferable property rights entitling the holder to limited access to the atmosphere--hybrid global property rights for environmental protection. [FN265] But in order to create this system of restricted property rights, we had to borrow ideas from national law--that is, we needed

a non-exclusive body of law in order to construct an exclusionary system of resource management. But that raises the suspicion that there might be another tragedy of the commons going on here--in the production of law itself. If property rights applied to the laws--if national governments, or judges, could copyright their laws and preclude unauthorized copying--then legal borrowing would be impeded. Perhaps property rights are unnecessary for law; does the absence of property rights over laws undermine nations' or judges' incentives to produce good laws? That seems unlikely. Would conferring on national governments or judges a right to exclude others from (and to transfer) their laws be a useful incentive for the production of better laws? Or do we already have too much investment in lawmaking? Would such property rights create undesirable monopoly power in the inventors of laws? Even if national governments did somehow obtain the right to exclude others from their laws, perhaps legal borrowing would still represent a "fair use" essential to mitigating the monopoly costs of intellectual property rights. [FN266] Without borrowing, no system of *1371 legal precedent could survive. Global regulatory law would be seriously impaired. As Dean Pound observed, almost all law involves borrowing. [FN267]

The trick is to borrow astutely, cross-breeding concepts from national environmental law with the structure of international law. The metaphor of "legal transplants" is apt: we are selecting a bit of regulatory DNA from national law, inserting it into an international law embryo, and hoping that this new legal hybrid will grow to be a hardy offspring. In that sense, global environmental law is a marriage of international and national environmental law: something old, something new, something borrowed for something blue.

Copyright (c) 2001 by The Regents of the University of California

[FN1]. Professor, Law School and Nicholas School of the Environment, Duke University. I am grateful to Richard Stewart for bringing me to work with him in government and for countless conversations since, and to Donald Horowitz for introducing me to the literature on legal borrowing. I thank Donald Horowitz, Robert Keohane, and Peter Sand for very helpful comments on a prior draft, and Ken Berlin, Herbert Bernstein, Jamie Boyle, Edith Brown Weiss, Michael Byers, William Clark, John Echeverria, Lakshman Guruswamy, Richard Lazarus, Jerome Reichman, Anne-Marie Slaughter, and participants in workshops at Boalt Hall and Georgetown Law Schools for very helpful discussions. Leah Russin, Nicolle Snyder, and Annecoos Wiersema provided excellent research assistance.

[FN1]. Alan Watson, *Legal Transplants: An Approach to Comparative Law* 22 (2d ed. 1993) (quoting Roscoe Pound) [hereinafter Watson, *Legal Transplants*].

[FN2]. I use the term "the climate change treaties" to refer to the United Nations Framework Convention on Climate Change (FCCC) adopted at Rio de Janeiro in 1992, 31 I.L.M. 849 (entered into force Mar. 21, 1994), and the Kyoto Protocol to the FCCC adopted in 1997, 37 I.L.M. 22 (opened for signature Mar. 16, 1998).

[FN3]. See, e.g., Watson, *Legal Transplants*, supra note 1. There is a parallel literature on the diffusion of social innovations. See, e.g., Torsten Hägerstrand, *The Diffusion of Innovations*, 4 *International Encyclopedia of Social Sciences* 194 (1968); A. J. Toynbee, *12 A Study of History: Reconsiderations* 343 (1961) (describing as "mimesis" the process of cross-cultural diffusion). For application of diffusion theory to environmental law, see Peter H. Sand, *Transnational Environmental Law: Lessons in Global Change* 241 (1999).

[FN4]. See Alan Watson, *The Importance of "Nutshells,"* 42 *Am. J. Comp. L.* 1, 14-15 (1994) [hereinafter Watson, *Nutshells*].

[FN5]. Watson, *Legal Transplants*, supra note 1, at 21 (emphasis added).

[FN6]. See *id.* (recounting numerous examples of transnational borrowing, including adoption of Roman Law in Europe

and adoption of French law in Japan); Peter de Cruz, *Comparative Law in a Changing World* 486-87 (1995) (noting how legal systems become more alike as countries become more alike); Francesca E. Bignami, *The Democratic Deficit in European Community Rulemaking: A Call for Notice and Comment in Comitology*, 40 *Harv. Int'l L.J.* 451 (1999) (describing EU adoption of American concepts of notice and comment rulemaking); Julie Mertus, *Human Rights: Group Defamation, Freedom of Expression and the Law of Nations: What International and Domestic Laws Can Teach the United States*, by Thomas David Jones, 21 *Hous. J. Int'l L.* 581, 581-87 (1999) (book review) (discussing examples of U.S. law being introduced into Western Europe, Eastern Europe, Japan, and Latin America); John D. Jackson, *Playing the Culture Card in Resisting Cross-Jurisdictional Transplants: A Comment on "Legal Processes and National Culture,"* 5 *Cardozo J. Int'l & Comp. L.* 51, 63-66 (1997) (discussing transplants of criminal and civil procedure); Ugo Mattei, *Efficiency in Legal Transplants: An Essay in Comparative Law and Economics*, 14 *Int'l Rev. L. & Econ.* 3 (1994) (discussing transnational borrowings of property law doctrines); James A. F. Nafziger, *International and Foreign Law Right Here in River City*, 34 *Willamette L. Rev.* 4, 12 (1998) (recounting Karl Llewellyn's borrowing of German doctrines into U.S. contract law); Martin Shapiro, *The Globalization of Law*, 1 *Ind. J. Global Legal Stud.* 37 (1993) (discussing widespread transnational borrowing of administrative law concepts); Martin Shapiro, *The Giving Reasons Requirement*, 1992 *U. Chi. Legal F.* 179 (discussing European borrowing of American approaches to administrative law and judicial review); Jack B. Weinstein & Jonathan B. Wiener, *Of Sailing Ships and Seeking Facts: Brief Reflections on Magistrates and the Federal Rules of Civil Procedure*, 62 *St. John's L. Rev.* 429 (1988) (describing American borrowing of British approach to court-appointed masters and magistrates).

[FN7]. The classic works are Watson, *Legal Transplants*, supra note 1, at 95 (advocating frequent transnational borrowing and arguing that cross-national borrowing is the most important source of legal evolution); Otto Kahn-Freund, *On Uses and Misuses of Comparative Law*, 37 *Mod. L. Rev.* 1 (1974) (cautioning that cross-national legal borrowing can be undesirable because of national differences in culture, geography, wealth, religion, and other factors). See also William Ewald, *Comparative Jurisprudence (II): The Logic of Legal Transplants*, 43 *Am. J. Comp. L.* 489 (1995) (analyzing Watson's theory and his critics); Steven J. Heim, *Predicting Legal Transplants: The Case of Servitudes in the Russian Federation*, 6 *Transnat'l L. & Contemp. Probs.* 187 (1996) (comparing Watson and Kahn-Freund). Peter Sand has reminded me of the line from Goethe's *Faust*: "All rights and laws are still transmitted like an eternal sickness of the race, from generation unto generation fitted and shifted round from place to place." Johann Wolfgang von Goeth, *Faust*, *Mephisto Part I, Scene IV*.

[FN8]. Compare Steven G. Calabresi, *An Agenda for Constitutional Reform*, in *Constitutional Stupidities, Constitutional Tragedies* 22 (William N. Eskridge & Sanford Levinson eds., 1998) (advocating), with Bruce Ackerman, *The New Separation of Powers*, 113 *Harv. L. Rev.* 634 (2000) (cautioning). See also Daniel J. Dudek, Richard B. Stewart & Jonathan B. Wiener, *Environmental Policy for Eastern Europe: Technology-Based versus Market-Based Approaches*, 17 *Colum. J. Envtl. L.* 1 (1992) (advising Eastern Europe to borrow updated American understanding of the best approaches to environmental regulation, not just copy American law as it has been adopted in the past); Heim, supra note 7 (evaluating whether Russia is likely to adopt American property law doctrines as Russia creates markets in land); Thomas W. Waelde & James L. Gunderson, *Legislative Reform in Transition Economies: Western Transplants-A Short Cut to Social Market Economy Status?*, 43 *Int'l & Comp. L.Q.* 347, 367 (1994) (discussing borrowing by economies in transition to market economies).

[FN9]. See Vicki C. Jackson & Mark Tushnet, *Comparative Constitutional Law* (1999); Vicki C. Jackson, *Ambivalent Resistance and Comparative Constitutionalism: Opening up the Conversation on "Proportionality," Rights and Federalism*, 1 *U. Pa. J. Const. L.* 583 (1999); Mark Tushnet, *The Possibilities of Comparative Constitutional Law*, 108 *Yale L.J.* 1225 (1999).

[FN10]. See generally Philippe Sands, *Principles of International Environmental Law* (1995) (describing new international environmental treaties as based on prior treaties); Paul C. Szasz, *International Norm-Making, in Environmental Change and International Law: New Challenges and Dimensions* 41 (Edith Brown Weiss ed., 1992) (attributing international environmental treaties to prior international law and to international organizations).

[FN11]. See Watson, Nutshells, *supra* note 4, at 22 (noting that "Scholars also generally work with one legal system, and are unaware that a particular feature in that system is prominent in many others, and has a general significance.").

[FN12]. See Peter J. Spiro, Globalization, International Law, and the Academy, 32 N.Y.U. J. Int'l L. & Pol. 567 (2000).

[FN13]. See *id.*; David Kennedy, New Approaches to Comparative Law: Comparativism and International Governance, 1997 Utah L. Rev. 545 (discussing ambition of international law to be "above" the fray of culture and politics addressed by comparative law at the national level); H. Lauterpacht, The So- Called Anglo-American and Continental Schools of Thought in International Law, 12 Brit. Y.B. Int'l L. 31 (1931) ("The fact that rules of municipal law in one group of States differ from those in another group is on the whole irrelevant for the purposes of international law.").

[FN14]. I am grateful to Don Horowitz for emphasizing this point.

[FN15]. See Szasz, *supra* note 10, at 48-49 (predicting suspicion or rejection of treaty ideas perceived as emanating from a particular country).

[FN16]. See Kennedy, *supra* note 13; Watson, Legal Transplants, *supra* note 1.

[FN17]. The mutual inattention of international law and comparative law parallels the similar mutual neglect, until recently, of international law and economic analysis of law. See Jeffrey L. Dunoff & Joel P. Trachtman, Economic Analysis of International Law, 24 Yale J. Int'l L. 1 (1999). More generally, Peter Spiro has observed:

So complete was the isolation of international law scholars that they rarely sought to import models from other areas. Even after decades of ascendancy, for example, it has been only recently that law and economics is being applied in international law contexts; international law scholars were also relatively late to feminist analysis. Even where international law has been quick to adopt other approaches, as has been true with critical legal methods, there seems to have been very little heed paid by the theoretical progenitors from the domestic law side.... But the [new] trend [toward international law borrowing ideas from other areas of law] is generally to be welcomed. Established methodologies should present fresh analytical insights for looking at international law, old and new. And the tables may eventually turn, so that established methodologies will find their continuing vitality contingent upon their relevance to international law problems."

Spiro, *supra* note 12, at 579-80 (citations omitted).

[FN18]. See Kennedy, *supra* note 13.

[FN19]. For example, the United States banned CFCs in aerosol spray cans in 1978, and the U.S. Congress was debating additional CFC control legislation in 1986 during the negotiations on the Montreal Protocol. See Richard Benedick, Ozone Diplomacy (1991) (describing negotiations leading to the Montreal Protocol); Steven J. Shimberg, Stratospheric Ozone and Climate Protection: Domestic Legislation and the International Process, 21 Env'tl. L. 2175, 2183- 185 (1991); see also Michael Byers, Custom, Power and the Power of Rules 88- 105 (1999) (describing examples of national law developments which spurred codification in international law).

[FN20]. In the stratospheric ozone example, the 1987 Montreal Protocol did not transplant the legal ideas of the 1978 U.S. aerosol spray can ban and preceded the eventual enactment of the distinct regulatory provisions in the 1990 Clean

Air Act Amendments. See Shimberg, *supra* note 19, at 2178, 2188-92.

[FN21]. See Sands, *supra* note 10 (describing accretion of customary international environmental law); Edith Brown Weiss, A Reply to Barresi's "Beyond Fairness to Future Generations," 11 *Tul. Envtl. L.J.* 89, 96 (1997) (stating that "national sources of law contribute to the formation of international law").

[FN22]. See, e.g., Nafziger, *supra* note 6, at 11-16 (describing the influence of international law on national law approaches to contracts, cultural heritage, and human rights law); Steven R. Ratner & Anne-Marie Slaughter, Appraising the Methods of International Law: A Prospectus for Readers, 93 *Am. J. Int'l L.* 291, 301 (1999) (hoping for such influence). See generally, A. Dan Tarlock, The Influence of International Environmental Law on U.S. Pollution Control Law, 21 *Vt. L. Rev.* 759 (1997).

[FN23]. Tarlock, *supra* note 22, at 760-63 (arguing that international environmental law could authorize or compel changes in U.S. environmental law); see *Murray v. The Schooner Charming Betsy*, 6 U.S. (2 Cranch) 64, 118 (1804) (holding that acts of Congress should be construed to avoid violations of international law); *The Paquete Habana*, 175 U.S. 677, 700 (1900) (holding that international law is part of U.S. law and applicable in U.S. courts); U.S. Const. art. VI, cl. 2 (stating "all treaties... shall be the supreme law of the land"); cf. *United States v. Alvarez-Machain*, 504 U.S. 655 (1992) (applying international treaty law, but declining to apply "general principles" of international law).

[FN24]. Important elements of the U.S. Constitution, including the Bill of Rights, were borrowed from the laws of the American states, such as Virginia. U.S. environmental law has, at times, borrowed ideas from the states. For example, California rules on automobile emissions have been borrowed into the national Clean Air Act. See R. Percival et al., *Environmental Regulation: Law, Science and Policy* 606-17 (3rd ed. 2000). The European Union was designed as a federal structure that may have borrowed from the German example, though it may also or instead have borrowed horizontally from the U.S. example. The EC Treaty's concept of sovereign tort liability (Article 215(2)) may have been borrowed from national law as well, and the European Court of Justice has at times drawn doctrines from member states' laws. I am grateful to Herbert Bernstein for pointing out these examples in EU law. And EU environmental law has borrowed from its member states' laws. See *infra* note 80 (describing horizontal and vertical borrowing of UK environmental law into German and EU law).

[FN25]. See, e.g., Stephen P. Ladas, *1 Patents, Trademarks, and Related Rights: National and International Protection* 5-55, 283-86 (1975) (describing national law origins of international patent and trademark law); Paul Edward Geller, Legal Transplants in International Copyright: Some Problems of Method, 13 *UCLA Pac. Basin L.J.* 199, 200-01 (1994) (briefly mentioning borrowing of national copyright law into the Berne international copyright regime in 1886); Neil W. Netanel, Asserting Copyright's Democratic Principles in the Global Arena, 51 *Vand. L. Rev.* 217, 276-77 (1998) (briefly mentioning transplanting of national copyright law into international copyright law).

[FN26]. See Nafziger, *supra* note 6, at 13 (briefly mentioning inclusion of concepts from the UCC into the International Convention on the Sale of Goods); Mertus, *supra* note 6, at 581 (1999) (asserting that "International bodies borrow laws from states' law and practice," in an article otherwise about transnational borrowing, but without offering any examples); Commentary on the Rome Statute of the International Criminal Court 806 (Otto Triffterer ed., 1999) (noting that provisions of the ICC treaty, such as Article 63 on presence of the accused at trial, are borrowed from national criminal law doctrines).

[FN27]. See Harry First, Antitrust in Japan: The Original Intent, 9 *Pac. Rim L. & Pol'y J.* 1, 70-71 (2000) (briefly suggesting that experience with cross-national borrowing of antitrust law may be informative for the design and implementation of a proposed international antitrust treaty); Steven Schwarcz, Sovereign Debt Restructuring: A

Bankruptcy Reorganization Approach, 85 Cornell L. Rev. 956 (2000) (proposing borrowing of U.S. bankruptcy law concepts into a new treaty on international sovereign debt).

[\[FN28\]](#). See Anne-Marie Burley [Slaughter], Regulating the World: Multilateralism, International Law, and the Projection of the New Deal Regulating State, in *Multilateralism Matters* 125 (J. G. Ruggie ed., 1993).

[\[FN29\]](#). See Sonja Boehmer-Christiansen, The Precautionary Principle in Germany--Enabling Government, in *Interpreting the Precautionary Principle* 33 (Tim O'Riordan & James Cameron eds., 1994).

[\[FN30\]](#). Michael Glennon & Alison Stewart, The United States: Taking Environmental Treaties Seriously, in *Engaging Countries* 173, 175 (Edith Brown Weiss & Harold Jacobson eds., 1998).

[\[FN31\]](#). See *id.* at 176.

[\[FN32\]](#). See *id.* at 176, 190.

[\[FN33\]](#). Tarlock, *supra* note 22, at 759 (citing Sands, *supra* note 10). Sands, however, appears to be talking mostly about national law giving rise to customary international law, not so much about direct borrowing into international treaty law. See Sands, *supra* note 10, at 213 (regarding precautionary principle as a principle of customary international law), at 579-82 (regarding EIA as a principle of both treaties and customary international law), and at 638 (regarding liability for transboundary pollution as a principle of customary international law).

[\[FN34\]](#). Tarlock, *supra* note 22, at 759-60; see also Kevin R. Gray, International Environmental Impact Assessment: Potential for a Multilateral Environmental Agreement, 11 *Colo. J. Int'l Envtl. L. & Pol'y* 83 (2000) (discussing option of transplanting national law models for EIA into international law).

[\[FN35\]](#). These three examples may not be especially important aspects of international environmental law. First, the principle of state liability for transboundary damage is rarely if ever enforced. See Thomas W. Merrill, Golden Rules for Transboundary Pollution, 46 *Duke L.J.* 931, 957-67 (1997). Even the landmark case cited for its adoption in international law, the Trail Smelter case, *Trail Smelter (U.S. v. Can.)*, 3 R.I.A.A. 1938 (1949), was a voluntary arbitration over the remedy (damages or injunction) in which the parties assumed without deciding that the liability principle would apply. See *Developments in the Law-International Environmental Law*, 104 *Harv. L. Rev.* 1484, 1500-01 (1991). Second, EIA is a good idea, but without more (such as judicial review), it is arguably quite limited in constraining actual environmental impacts; at the least, its influence at the international level is open to empirical investigation. See Gray, *supra* note 34, at 84 (noting that nation-state sovereignty and lack of enforcement institutions make EIA requirements at international level even less effective than at the national level). Still, there has been widespread "horizontal" borrowing of EIA rules into national law, where it may be more effective, and this process of diffusion has been aided by the attention given to EIA in international institutions such as UNEP, see John E. Bonine, *Environmental Impact Assessment*, 17 *Envtl. Pol'y & Law* 5 (1987), and the World Bank (Operational Policy 4.01 (1991)), and in international treaties such as the FCCC, *supra* note 2, art. 4(1)(f), 31 *I.L.M.* 849, and the Convention on Biological Diversity, Rio de Janeiro Convention on Biological Diversity, June 5, 1992, art. 14, 31 *I.L.M.* 818. Third, the Basel Convention on hazardous waste shipments regulates only one narrow avenue of transboundary pollution--an area that may be important in some cases, but that is regularly ranked as among the least serious environmental risks. See *Envtl. Prot. Agency Sci. Advisory Bd., Reducing Risk* (1990). Notably, in his list of borrowings from national to international environmental law, Tarlock does not cite the major substantive international environmental treaties, such as the Climate Change treaties, the Montreal Protocol on Substances that Deplete the Ozone Layer, the Convention on International Trade in Endangered

Species of Flora and Fauna (CITES), and the Convention on Biological Diversity.

[FN36]. See Edith Brown Weiss, *The New International Legal System*, in *Perspectives on International Law* (Nandasiri Jasentuliyana ed., 1995) (discussing increasingly blurred line between national and international law); cf. Alan Watson, *Aspects of Reception of Law*, 44 *Am. J. Comp. L.* 335, 335 (1996) (observing in the transnational context that "students and scholars are hesitant to accept the obvious fact of massive borrowing and to consider its implications.") [hereinafter Watson, *Aspects*].

[FN37]. It was only in the last few decades that biologists such as Peter and Rosemary Grant conducted the meticulous fieldwork needed to reveal that hybridization across animal species is pervasive. This research implies that the conventional notion of sharply distinct species that do not interbreed is itself questionable. For an account of the Grants' work, see Jonathan Weiner, *The Beak of the Finch* (1995) [hereinafter Weiner, *Finch*]. On the implications of this realization for environmental law, see Jonathan B. Wiener, *Law and the New Ecology: Evolution, Categories and Consequences*, 22 *Ecology L.Q.* 325 (1995).

[FN38]. One source of my account of the legal borrowing in the climate treaties is my own personal involvement in that borrowing process. I served at the Department of Justice (DOJ) from 1989-91, at the White House Office of Science & Technology Policy (OSTP) in 1992, and at the White House Council of Economic Advisers (CEA) from 1992 until the end of 1993, in both the Bush and Clinton administrations. In these capacities I participated directly in the legal borrowing recounted here. I recognize that this makes my account susceptible to my own perceptions and leanings; but that would be true for any author. In a similar context, writing about the evolution of corporate law, Bob Clark admitted that his examples came "from my own work," a fact that "causes me some embarrassment" but which he explained by his greater awareness of the details, and for which he was "willing to be called to task for any alleged errors." Robert C. Clark, *The Interdisciplinary Study of Legal Evolution*, 90 *Yale L.J.* 1238, 1240 (1981). Likewise, my purpose in recounting the climate change treaty experience here is to illustrate the vertical borrowing that went on, not to justify it. Indeed, toward the end of this Article, I will offer both some praise and some criticism of this exercise. I offer this account as an invitation to encourage discussion of vertical or trans-echelon legal borrowing and how it influences the evolution of global environmental law. It would be worse if I were to describe this history without disclosing my own role in it. It would be worse still if I were to keep mum about the climate change example and thereby continue the tradition of suppressing acknowledgment and analysis of trans-echelon borrowing.

[FN39]. See Daniel Bodansky, *The United Nations Framework Convention on Climate Change: A Commentary*, 18 *Yale J. Int'l L.* 451, 517 (1993).

[FN40]. See *id.*

[FN41]. *Id.* at 517 n.404.

[FN42]. The IPCC is a technical advisory body created by the United Nations (U.N.) and the World Meteorological Organization (WMO) in 1988--in part to place control over the process and debate in the hands of governments rather than non-governmental meetings such as the Toronto conference.

[FN43]. See Bodansky, *supra* note 39, at 469 n.122.

[FN44]. For elaboration of these approaches, see *infra* Parts II.A.2 and II.B below. By 1996, former Norwegian Prime

Minister Gro Harlem Brundtland (today, head of the World Health Organization) described these ideas, in hindsight, as the "basic principles" of the FCCC and of the imminent Kyoto Protocol. See Richard Schmalensee, *Greenhouse Policy Architectures and Institutions*, in *Economics and Policy Issues in Climate Change* 137, 142 (William D. Nordhaus ed., 1998) (quoting Gro Harlem Brundtland, *Burdensharing under the Climate Convention: Remarks at the MIT/CICERO Global Change Forum*, Oslo (June 13, 1996), "We knew the basic principles on which we needed to build: cost-effectiveness, equity, joint implementation, and comprehensiveness.").

[FN45]. Indeed many of the diplomats were not lawyers, nor familiar with domestic environmental law. For example, the U.S. Assistant Secretaries of State for environmental matters who served during the FCCC negotiations were a physicist and then an expert on international trade.

[FN46]. The new Assistant Attorney General in charge of the Environment Division (then called Lands & Natural Resources) was Richard Stewart, who had been the environmental law professor at Harvard Law School for 15 years and was a prominent legal scholar with a broad range of ideas on designing environmental law. (After his stint at Justice, Stewart is now at NYU Law School.) Stewart was being consulted more for his own scholarly expertise than because of his agency's institutional role. Stewart had just hired me as his Special Assistant, and he asked me to draft the requested memo on climate policy.

[FN47]. As one example of the change in attitude toward environmental law from the Reagan administration to the Bush administration, the latter promptly pushed aggressively for major additions to the Clean Air Act, which became law in 1990--the first amendments to that law in 13 years.

[FN48]. Among the key scientists with whom we worked were Daniel Albritton, head of the NOAA Aeronomy Laboratory, and Robert T. Watson, then at NASA, later an associate Science Advisor to President Clinton, after that chief scientist of the World Bank's Global Environment Facility, and now head of the IPCC.

[FN49]. See Memorandum from Richard B. Stewart to D. Allan Bromley (Dec. 18, 1989) (on file with author).

[FN50]. See U.S. Submission to IPCC Working Group III, Dec. 29, 1989 (copy on file with author); Bodansky, *supra* note 39, at 517.

[FN51]. See U.S. Papers prepared for the IPCC Working Group III Seminar on the Comprehensive and Emissions Trading Approaches to Environmental Policy, Washington D.C., Feb. 3, 1990 (copy on file with the author).

[FN52]. At that seminar, Richard Smith of the State Department (chair of the RSWG) moderated; Daniel Albritton of NOAA presented the relevant science of climate change; Dick Stewart of DOJ presented the case for the comprehensive approach; and Dick Schmalensee of the Council of Economic Advisers (CEA) (now Dean of the Sloan School of Management at MIT) presented the case for emissions trading. J. Clarence (Terry) Davies, then Assistant Administrator for Policy at EPA and now at Resources for the Future, offered additional comments.

[FN53]. See U.S. Dep't of Justice, *Task Force on the Comprehensive Approach to Climate Change, A Comprehensive Approach to Addressing Potential Climate Change* (1991) (copy on file with the author). We also presented our views in Richard B. Stewart & Jonathan B. Wiener, *A Comprehensive Approach to Climate Change*, 1 *Am. Enterprise* no. 6, 75 (1990) [hereinafter Stewart & Wiener, *A Comprehensive Approach*]; and in 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) [hereinafter Stewart & Wiener, *The Comprehensive Approach*].

[FN54]. See IPCC, *Response Strategies* (1990). It helped that the U.S. chaired the RSWG, and that this portion of the Legal Measures paper was shepherded by John Gilbert, a delegate from New Zealand (where tradeable allowances were in significant use).

[FN55]. One of the first signs of movement was the Second World Climate Conference held in November 1990, at which the United States succeeded in obtaining language that was at least open to a comprehensive approach: countries should "take actions aimed at stabilizing their emissions of carbon dioxide, or carbon dioxide and other greenhouse gases not controlled by the Montreal Protocol...." SWCC Ministerial Declaration, para. 12 (quoted in Bodansky, *supra* note 39, at 470 n.123 (emphasis added)). During the FCCC negotiations, countries including Canada, Australia, New Zealand, and Norway joined the United States in support of the comprehensive approach. See Bodansky, *supra* note 39, at 518.

[FN56]. I served as Senior Staff Economist for environmental issues at the President's Council of Economic Advisers in the first year of the Clinton administration, where I worked among other topics on U.S. climate policy.

[FN57]. See James E. Hansen et al., *Global Warming in the Twenty-First Century: An Alternative Scenario*, 97 Proc. of the Nat'l Acad. Sci. 9875 (2000).

[FN58]. Andrew C. Revkin, *Study Proposes New Strategy to Stem Global Warming*, N.Y. Times, Aug. 19, 2000, at A13. The approach proposed is not, of course, "new"; it is exactly what DOJ proposed in 1989, and for the same reasons: superior environmental performance and lower cost. See U.S. Dep't of Justice, *supra* note 53; Stewart & Wiener, *The Comprehensive Approach*, *supra* note 53; Jonathan B. Wiener, *Protecting the Global Environment*, in *Risk vs. Risk: Tradeoffs in Protecting Health and the Environment* ch. 10 (John D. Graham & Jonathan B. Wiener eds., 1995) [hereinafter Wiener, *Protecting the Global Environment*]. The new study by Hansen et al. further demonstrates the environmental and economic superiority of the comprehensive approach. See Hansen et al., *supra* note 57.

[FN59]. See Andrew C. Revkin, *U.S. Is Proposing New Way to Fight Global Warming*, N.Y. Times, Aug. 2, 2000, at A1 (stating that "the U.S. is proposing that countries get just as much credit for using forests and farmers' fields to sop up carbon dioxide... as they would for cutting emissions from smokestacks and tail pipes."). Again, this proposal is not "new"; it is what DOJ proposed in 1989, and for the same reasons: lower GHG abatement costs and the environmental benefits of forest conservation. See U.S. Dep't of Justice, *supra* note 53; Stewart & Wiener, *The Comprehensive Approach*, *supra* note 53; Wiener, *Protecting the Global Environment*, *supra* note 58. Some European countries agree with this approach, but others remain opposed, resulting in impasse at the Conference of the Parties held in The Hague in November 2000. See Andrew C. Revkin, *Odd Culprits in Collapse of Climate Talks*, N.Y. Times, Nov. 28, 2000, at D1 [hereinafter Revkin, *Odd Culprits*]. European opposition to including sinks may reflect doubt on the merits, but it may also be a move to "raise rivals' costs" by denying sink options to the United States, Canada, and other nations. See Jonathan B. Wiener, *On the Political Economy of Global Environmental Regulation*, 87 Geo. L.J. 749, 777-80 (1999) [hereinafter Wiener, *On the Political Economy*].

[FN60]. See *Climate Change: Emission Trades, Not Joint Implementation, Likely Part of Kyoto Pact*, EPA Official Says, [Nov. 21, 1997] 28 Env't Rep. (BNA) 1409 ("Both trading and joint implementation are hallmarks of the U.S. proposal for the new climate change deal..."); John J. Fialka, *Breathing Easy: Clear Skies Are Goal as Pollution Is Turned into a Commodity*, Wall St. J., Oct. 3, 1997, at A1 ("The Clinton administration has made trading a main part of its negotiating position on the treaty to prevent global warming."); *Remember Global Warming?*, N.Y. Times, Nov. 11, 1998, at A26 ("The United States would have rejected the Kyoto Protocol if it had not [allowed] the sale or trade of emissions allowances among nations."); William K. Stevens, *Kyoto Meeting Moves Closer to an Agreement on*

Greenhouse Gases, N.Y. Times, Dec. 10, 1997, at A2 ("[U.S. chief negotiator Stuart] Eizenstat said the revised American target was contingent on the acceptance of a comprehensive package that includes the 'trading' of emissions among countries and regions."); Global Warming Accord: "Tough" or a "Farce?", at <http://www.cnn.com/EARTH/9712/11/climate.conf.reaction.reut/index.html> (last modified Dec. 11, 1997) ("We got what we wanted, which was joint implementation, emissions trading, a market- oriented approach...,' [President] Clinton said [of the Kyoto Protocol agreement].").

[FN61]. In the summer of 2000, President Clinton wrote a letter to British Prime Minister Tony Blair re-emphasizing the United States' insistence on emissions trading as essential to any climate treaty. See *Changing the Climate of Opinion*, *Economist*, Aug. 12, 2000, at 59; see also Matthew L. Wald, *Clinton Seeks to Regulate Common Gas to Clean Air*, N.Y. Times, Nov. 12, 2000, at 29 (describing U.S. advocacy of "cap and trade" system for GHGs).

[FN62]. Early examples include J. H. Dales, *Pollution, Property & Prices* (1968); Thomas D. Crocker, *The Structuring of Atmospheric Pollution Control Systems*, in *The Economics of Air Pollution* 61, 81-84 (Harold Wolozin ed., 1966); W. David Montgomery, *Markets in Licenses and Efficient Pollution Control Programs*, 5 *J. Econ. Theory* 395 (1972).

[FN63]. See, e.g., Robert W. Hahn & Gordon L. Hester, *Marketable Permits: Lessons for Theory and Practice*, 16 *Ecology L.Q.* 361, 367 (1989) (describing U.S. EPA's emissions trading program).

[FN64]. See *id.* at 380 .

[FN65]. See Alex N. Manson, *Intergovernmental Cooperation: Air Pollution from a Canadian Perspective*, 18 *Can.-U.S. L.J.* 251, 252 (1992).

[FN66]. See Peter H. Pearse, *Building on Progress: Fisheries Policy Development in New Zealand* (N.Z. Ministry of Agric. & Fisheries, July 1991). Other countries have also adopted such "individual transferable quotas" (ITQs) to protect fisheries, including Australia, Canada, Iceland, and the U.S. See Kirsten Batkin, *New Zealand's Quota Management System: A Solution to the United States' Federal Fisheries Management Crisis?*, 36 *Nat. Resources J.* 615 (1996); Carrie A. Tipton, *Protecting Tomorrow's Harvest: Developing a National System of Individual Transferable Quotas to Conserve Ocean Resources*, 14 *Va. Env'tl. L.J.* 381 (1995).

[FN67]. See 42 U.S.C. §§ 7651-7651o (1994).

[FN68]. See Daniel J. Dudek, *Marketable Instruments for Managing Global Atmospheric Problems* (EDF, July 7-11, 1987) (copy on file with the author). EDF, now called Environmental Defense, continues to be the leading NGO advocating international emissions trading to achieve greenhouse gas abatement. Daniel Dudek, Joe Goffman, Annie Petsonk, and others at Environmental Defense have led this effort. Goffman helped design the Acid Rain trading program at EDF, then served as a Congressional staff member and then an EPA aide in the process of getting the Acid Rain trading program enacted and implemented, and then returned to EDF, where he now works on international GHG emissions trading. Petsonk worked at the U.N. Environment Programme in Nairobi, and then was hired by Dick Stewart to be DOJ's expert on international environmental law. She was an invaluable colleague in DOJ's efforts to design and advocate its climate change proposals. After a stint at the U.S. Trade Representative, Petsonk is now the International Counsel at Environmental Defense. Meanwhile, Dick Stewart had been on the board of trustees of EDF and was a longtime advocate of emissions trading. See, e.g., Bruce A. Ackerman & Richard B. Stewart, *Reforming Environmental Law*, 37 *Stan. L. Rev.* 1333 (1985); Richard B. Stewart, *Controlling Environmental Risks Through Economic Incentives*, 13 *Colum. J. Env'tl. L.* 153 (1988). Stewart and I consulted with EDF (and others) as we wrote our memos proposing that

the U.S. government advocate emissions trading and the comprehensive approach for global climate policy.

[FN69]. See Montreal Protocol on Substances that Deplete the Stratospheric Ozone Layer, 26 I.L.M. 1550, art. 1(8), 2(5) (entered into force Jan. 1, 1989). DOJ cited this example as one precedent for international emissions trading, although it had rarely if ever been used and did not employ formal tradeable allowances. Another precedent DOJ cited was debt-for-nature swaps, although again these did not involve formal tradeable allowances.

[FN70]. See Dudek et al., *supra* note 8, at 1.

[FN71]. See Bodansky, *supra* note 39, at 468 n.110, 472 n.136.

[FN72]. For example, the U.S. Submission to the IPCC (1989), *supra* note 50, urges adoption of the comprehensive approach but only study of emissions trading.

[FN73]. See Bodansky, *supra* note 39, at 522 & n.432 (describing U.S. initial proposal of formal emissions trading and subsequent U.S. retreat from formal emissions trading to informal cooperation once the U.S. had firmly opposed targets and timetables). Tracking this shift in emphasis, Article 3(3) of the FCCC states that "[e]fforts to address climate change may be carried out cooperatively by interested Parties."

[FN74]. I recall the Norwegian delegate standing up at the IPCC/RSWG meeting in June 1990 to announce that after recent consultations within the Norwegian government, including both its environment and economic ministries, Norway now believed that cost-effectiveness was an essential criterion of a climate treaty. Norway thereafter was one of the most effective advocates of market-based flexibility provisions in the climate treaties. But the EU was and remains resistant to global GHG emissions trading. This may reflect doubt on the merits, or perhaps the EU's interests in a policy design that raises its rivals' costs. See Wiener, *On the Political Economy*, *supra* note 59, at 773-80.

[FN75]. See Bodansky, *supra* note 39, at 521.

[FN76]. See *supra* notes 60-61 (citing U.S. insistence on emissions trading in Kyoto Protocol).

[FN77]. See Peter Passell, *Yawn. A Global Warming Alert. But This One Has Solutions*, N.Y. Times, Feb. 13, 1997, at D2 (discussing economists' statement on global warming policy).

[FN78]. See Kyoto Protocol, *supra* note 2, art. 17; see also *The Kyoto Compromise*, *Economist*, Dec. 13, 1997, at 16 (calling the adoption of international emissions trading "a great leap forward in global environmental thinking").

[FN79]. See *Risk vs. Risk*, *supra* note 58.

[FN80]. See Lakshman Guruswamy, *The Case for Integrated Pollution Control*, 54 L. & Contemp. Probs. 41 (1991); *Integrated Pollution Control* (Nigel Haigh & Irene Erwin eds., 1990); J. Clarence Davies, *Conservation Foundation, Draft of a Single Environmental Statute* (1986); Alfred Marcus, *EPA's Organizational Structure*, 54 L. & Contemp. Probs. 5 (1991). Since the early 1990s, the UK has made significant efforts to adopt integrated pollution control, especially in

its 1990 and 1995 Environmental Protection Acts and its creation of an integrated pollution control agency. See Albert Weale, *Environmental Regulation and Administrative Reform in Britain*, in *Regulating Europe 106* (Giandomenico Majone ed., 1996); Michael Purdue, *Integrated Pollution Control in the Environmental Protection Act 1990: A Coming of Age of Environmental Law?*, 54 *Mod. L. Rev.* 534 (1991); Neil Carter & Philip Lowe, *The Establishment of a Cross-Sector Environment Agency*, in *UK Environmental Policy in the 1990s 38* (T. Gray ed., 1995). The UK approach has since been borrowed "horizontally" by other countries in Europe, see Johannes Zöttl, *Towards Integrated Protection of the Environment in Germany?*, 12 *J. Envtl. L.* 281 (2000), and "vertically" by the EU in its Directive 96/61, see *Integrated Pollution Prevention and Control: The EC Directive from a Comparative Legal and Economic Perspective* (Chris Backes & Gerrit Betlem eds., 1999) (describing the "vertical" borrowing that takes place in the EU Directive).

[FN81] A related roughly contemporaneous example was the U.S. national legislation, enacted in 1990, to implement the Montreal Protocol: in Section 612 of the Clean Air Act, the U.S. required substitutes for CFCs to be evaluated in terms of multiple risk factors (which EPA then defined to include ODP, GWP, toxicity, and other impacts), and to be regulated to "reduce overall risk." This is an example of multi-risk comprehensiveness, but not of a multi-pollutant or multi-sector approach. See 42 U.S.C. § 7671k (1994); Wiener, *Protecting the Global Environment*, supra note 58 (describing EPA rules promulgated under Section 612). Meanwhile, however, the 1990 CAA amendments declined to adopt a multi-pollutant comprehensive approach to acid rain, instead focusing Title IV only on SO₂ and leaving the possibility of SO_x-NO_x trading to be considered later. See 42 U.S.C. § 7651b(c) (1994).

[FN82] It was White House Counsel C. Boyden Gray who had initially solicited Dick Stewart's advice on climate policy. Gray, his deputy, John Schmitz, and their associate, Jeffrey Holmstead, became key players in the effort to promote the comprehensive approach and emissions trading, as well as a related project to conserve global forests through a system of market-based tradeable obligations called the "Forests for the Future Initiative."

[FN83] CEA member Dick Schmalensee (now Dean of the Sloan School at MIT) and senior staff economist Howard Gruenspecht (now at RFF) played pivotal roles, helping to improve and present the proposals.

[FN84] OSTP Director D. Allan Bromley (a Yale physics professor) chaired the high-level DPC Global Change Working Group.

[FN85] EPA Administrator Bill Reilly became a key supporter of the comprehensive approach and emissions trading (as well as co-chair of the related "Forests for the Future Initiative" launched in 1992). Experts in the Policy office, including Terry Davies and Dick Morgenstern (both now at RFF), Dan Esty (now at Yale), and Alex Cristofaro, helped frame and quantify our analysis. At the Air office, Kathleen Hogan developed the methane research program. EPA General Counsel E. Donald Elliott, like Stewart a leading environmental law professor (Elliott at Yale Law School), Associate General Counsel Edith Brown Weiss (an international environmental law expert from the Georgetown Law faculty), and attorney Scott Hajost (now at IUCN), were also helpful, as was Alan Hecht in the international office of EPA.

[FN86] Rick Bradley, Ted Williams, and others at DOE helped analyze the benefits of the comprehensive approach and emissions trading. In the Clinton administration, DOE officials Rich Rosenzweig and Dirk Forrister were among the strongest supporters of these ideas.

[FN87] John Reilly, an economist at USDA (now at MIT), was also quite helpful. See *infra* note 104.

[FN88] Dan Albritton from NOAA and Bob Watson from NASA.

[FN89]. Assistant Legal Adviser Sue Biniarz, Climate office director Dan Reifsnyder, and staff Jonathan Pershing and Jeff Miotke (who is now the Climate office director) became invaluable allies and educators in our efforts to translate the comprehensive approach and emissions trading into treaty provisions. Deputy Assistant Secretary Bob Reinstein in the Bush administration, and Rafe Pomerance in the Clinton administration, led the negotiating delegations to the FCCC. (As the Kyoto Protocol neared, the negotiations were led by Assistant Secretary Eileen Claussen and then Undersecretary Stuart Eizenstat. In the late 1990s, the U.S. delegation was led by Undersecretary Frank Loy, a former EDF board member.)

[FN90]. Watson, Aspects, supra note 36, at 335 (suggesting that horizontal legal borrowing can be a substitute for reasoned development of a domestic legal rule).

[FN91]. For more complete statements, see U.S. Dep't of Justice, supra note 53; Stewart & Wiener, The Comprehensive Approach, supra note 53; Jonathan B. Wiener, Global Environmental Regulation: Instrument Choice in Legal Context, 108 Yale L.J. 677 (1999) [hereinafter Wiener, Global Environmental Regulation]; Wiener, Protecting the Global Environment, supra note 58.

[FN92]. On regulatory matches and mismatches, see Stephen Breyer, Regulation and Its Reform (1982).

[FN93]. See Guruswamy, supra note 80; Charles E. Lindblom, The Science of "Muddling Through", 19 Pub. Admin. Rev. 79 (1959); Jonathan B. Wiener, Managing the Iatrogenic Risks of Risk Management, 9 Risk 39, 70-72, 79 (1998) (criticizing Lindblom's advocacy of incrementalism) [hereinafter Wiener, Iatrogenic Risks].

[FN94]. See Wiener, Iatrogenic Risks, supra note 93.

[FN95]. See generally Risk vs. Risk, supra note 58. Likewise, in the international context, "compliance with a treaty may result in the cessation of an activity that contributed to pollution, but it may also lead to an overall increase of pollution by encouraging other activities as substitutes whose consequences are even worse." Harold K. Jacobson & Edith Brown Weiss, A Framework for Analysis, in Engaging Countries 5 (Edith Brown Weiss & Harold K. Jacobson eds., 1998).

[FN96]. W. Harrington, Acid Rain: A Primer (1989).

[FN97]. See Guruswamy, supra note 80; Risk vs. Risk, supra note 58.

[FN98]. At the same time that diplomats were focusing on treaty proposals regulating only energy-sector CO sub2, scientists were demonstrating that CO sub2 was only one of several important GHGs. Although the volume of CO sub2 emitted has far exceeded that of other GHGs, each CO sub2 molecule is a relatively weak absorber of infrared radiation (heat). Other GHGs, such as methane (CH sub4) and nitrous oxide (N sub2 O), turned out to be important contributors to global warming potential, because despite their smaller volume of emissions, they are roughly 20 and 300 times more potent per mass, respectively, than CO sub2 at retaining heat in the atmosphere over time. Moreover, the relative impact of CO sub2 was expected to decline in the future because the portion of the infrared electromagnetic spectrum absorbed by CO sub2 was expected to become increasingly saturated. See The IPCC Scientific Assessment (John T. Houghton et al. eds., 1992).

[FN99]. See Henning Rodhe, A Comparison of the Contribution of Various Gases to the Greenhouse Effect, 248 Sci. 1217-19 (1990).

[FN100]. See Wiener, Protecting the Global Environment, *supra* note 58, at 209-12.

[FN101]. See *id.* at 214-18 (detailing plant fertilization effect of elevated CO sub2); Evan H. DeLucia et al., Net Primary Production of a Forest Ecosystem with Experimental CO sub2 Enrichment, 284 Sci. 1177-79 (1999). More generally, in order to be fully environmentally comprehensive, a comprehensive climate policy would need to be broadened to reflect the GHGs' full ecosystem impacts, including both warming and non-warming impacts. See U.S. Dep't of Justice, *supra* note 53; Stewart & Wiener, A Comprehensive Approach, *supra* note 53; Stewart & Wiener, The Comprehensive Approach, *supra* note 53, at 86-91, 99- 101; Wiener, Protecting the Global Environment, *supra* note 58.

[FN102]. See Hansen et al., *supra* note 57; Jae Edmonds et al., Advanced Energy Technologies and Climate Change: An Analysis Using the Global Change Assessment Model (GCAM) (April 27, 1994) (unpublished manuscript--draft version 2.0--on file with the Pacific Northwest Labs, Washington D.C.).

[FN103]. See William H. Schlesinger, Carbon Sequestration in Soils, 284 Sci. 2095 (1999).

[FN104]. Indeed, compared to a CO sub2 -only approach, a comprehensive approach significantly reduces the amount of "hot air" calculated to be awarded to Russia under the Kyoto Protocol. See J. Reilly et al., Multi-Gas Assessment of the Kyoto Protocol, 401 Nature 549, 550 (1999).

[FN105]. I say "potentially" because biodiversity conservation and carbon sequestration are compatible but distinct objectives which may entail mutually reinforcing or conflicting land management measures. For example, although conserving forests would both protect biodiversity and sequester carbon, new afforestation projects to sequester carbon might replace biodiverse mature forests with monoculture plantation forests. See Wiener, Protecting the Global Environment, *supra* note 58, at 218-19. A fully comprehensive approach would have to account for these problems of multi-objective optimization.

[FN106]. See R. Bradley et al., U.S. Dep't of Energy, Limiting Net Greenhouse Emissions in the United States, Volume II: Energy Responses 8.10- 8.12. (1991).

[FN107]. See World Bank, World Development Report 1992: Development and the Environment, Box 8.6 (1992).

[FN108]. See J. Reilly et al., *supra* note 104, at 549-55. The MIT study also noted that the multi-gas approach could actually be more effective at protecting the climate than the CO sub2 -only approach, because the relative global warming impact of the non-CO sub2 gases is expected to increase in the future (see *supra* note 98), and because the ability of CO sub2 to fertilize plant growth and hence stimulate carbon storage means that CO sub2 creates a negative feedback on global warming that the other gases do not. See Reilly et al., *supra* note 104, at 553-54; see also Katharine Hayhoe et al., 286 Sci. 905 (1999) (summarizing an EPA analysis that found similar cost savings under a comprehensive approach).

[FN109]. For further discussion, see generally Stewart & Wiener, The Comprehensive Approach, *supra* note 53.

[FN110] See Jonathan B. Wiener, Solving the Precautionary Paradox: Policy Approaches to Improve Measurement of GHG Sources and Sinks, in *Non-CO sub2 Greenhouse Gases* 527 (J. van Ham et al. eds., 1994). The "precautionary paradox" is that advocates of climate protection asserted that "scientific uncertainty is no excuse for inaction" as to global warming in general, but then argued that climate policy should not address GHGs other than CO sub2 because there is scientific uncertainty about the measurement of the emissions of these other GHGs.

[FN111] See U.S. Dep't of Justice, *supra* note 53; Stewart & Wiener, *The Comprehensive Approach*, *supra* note 53, at 86-91, 99-101. The FCCC reflects this approach; Article 4(2)(c) adopts not the GWP per se, but the "best available scientific knowledge" on the "respective contributions of such gases to climate change."

[FN112] Scott Barrett, *Reaching a CO sub2 Emission Limitation Agreement for the Community: Implications for Equity and Cost-Effectiveness*, 1 *Eur. Econ. J.* 3, 16 (1992).

[FN113] See Hahn & Hester, *supra* note 63; Paul L. Joskow et al., *The Market for Sulfur Dioxide Emissions*, 88 *Am. Econ. Rev.* 669 (1998). GHGs may be even better subjects for emissions trading than these successful national examples. First, GHGs involve little or no problem of local "hotspots" in which emissions bunching can escalate local damages. And the wider range of abatement costs worldwide offers even greater gains from trading.

[FN114] Jean-Marc Burniaux et al., *The Costs of Reducing CO sub2 Emissions: Evidence from GREEN* (OECD Economic Department Working Paper No. 115 (1992)); Alan Manne & Richard Richels, *The Berlin Mandate: The Costs of Meeting Post- 2000 Targets and Timetables*, 24 *Energy Pol'y* 205 (1996); John P. Weyant & J. Hill, *Introduction and Overview*, *Energy J.*, Special Issue, vii (1999).

[FN115] Adam B. Jaffe & Robert N. Stavins, *Dynamic Incentives of Environmental Regulation: The Effects of Alternative Policy Instruments on Technology Diffusion*, 29 *J. Envtl. Econ. & Mgmt.* S-43 (1995).

[FN116] Breyer, *supra* note 92, at 278-79 (1982). Breyer notes that monitoring the actual environmental performance of technology standards is quite difficult.

[FN117] See U.S. Dep't of Justice, *supra* note 53. For a more thorough presentation of this argument, developing and applying the concept of "participation efficiency," see Wiener, *Global Environmental Regulation*, *supra* note 91. The present subsection summarizes that analysis. In the negotiations on the FCCC and the Kyoto Protocol, DOJ and the U.S. government promoted emissions trading but did not fully appreciate the fundamental importance of arranging the emissions trading regime to deliver side payments to secure participation by major developing countries. See *infra* Part III.D. This was a basic failure of vertical legal borrowing that neglected to adapt the national law concept to the international legal framework.

[FN118] Council of Econ. Advisors, *Economic Report of the President* 170-72 (1998) (reporting that emissions in developing countries are growing faster than in developed countries and the former may exceed the latter by the year 2030).

[FN119] See Wiener, *Global Environmental Regulation*, *supra* note 91, at 692- 97.

[FN120]. Studies suggest that GHG emissions controls in the European Union or the OECD group of industrialized countries could result in leakage that offsets between 4 and 100% of the abatement initially achieved. See B. S. Fisher et al., *An Economic Assessment of Policy Instruments for Combating Climate Change*, in *Intergovernmental Panel on Climate Change--Climate Change 1995: Economic and Social Implications of Climate Change* 397 (J. P. Bruce et al. eds., 1995).

[FN121]. See Schmalensee, *supra* note 44, at 146.

[FN122]. 143 Cong. Rec. S8113-05 (July 25, 1997).

[FN123]. See John M. Broder, *Clinton Adamant on Third World Role in Climate Accord*, *N.Y. Times*, Dec. 12, 1997, at A1.

[FN124]. See William J. Baumol, *Environmental Protection and Income Distribution*, in *Redistribution Through Public Choice* 93 (H. H. Hochman & G. E. Peterson eds., 1974) (observing that the demand for environmental protection rises with income); Bodansky, *supra* note 39, at 463 (noting that in the climate treaty negotiations, developing countries, with "more immediate problems to worry about, such as poverty, drought, famine, and war," placed much lower priority on averting future climate change than did industrialized countries).

[FN125]. See Michael Hoel, *How Should International Greenhouse Gas Agreements Be Designed?*, in *The Economics of Transnational Commons* 172, 181 (Partha Dasgupta et al. eds., 1997); A. L. Hollick & Richard N. Cooper, *Global Commons: Can They Be Managed?* in *The Economics of Transnational Commons* 141, 168; see also Wiener, *Global Environmental Regulation*, *supra* note 91, at 698-99.

[FN126]. See Adam L. Aronson, *From "Cooperator's Loss" to Cooperative Gain: Negotiating Greenhouse Gas Abatement*, 102 *Yale L.J.* 2150, 2151 (1993).

[FN127]. See Thomas W. Merrill, *Golden Rules for Transboundary Pollution*, 46 *Duke L.J.* 981 (1997).

[FN128]. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 738. A classic statement is Lord McNair, *The Law of Treaties* 162 (1961) ("[N]o State can be bound by any treaty provision unless it has given its assent"). Under autocracy or majority vote, a rule is binding on all, including dissenters. Under a voting system of consent, a rule is binding only on those who agree to be bound; dissenters are not bound. Under a voting system of unanimity, a rule is binding only if everyone agrees to be bound; any dissent means no one is bound. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 735-55.

[FN129]. Abram Chayes & Antonia Handler Chayes, *The New Sovereignty* 27 (1995).

[FN130]. See Robert O. Keohane & Joseph Nye, *Transnational Relations and International Governance* (1972); Henry Lee, *Introduction*, in *Shaping National Responses to Climate Change: A Post-Rio Guide* 14 (Henry Lee ed., 1995) ("de facto transnational coalitions" often have "enormous influence" on international diplomacy).

[FN131] James Cameron, *The GATT and the Environment*, in *Greening International Law* 106-16 (Philippe Sands ed., 1994).

[FN132] Michael Hoel & Kerstin Schneider, *Incentives to Participate in an International Environmental Agreement*, 9 *Envtl. & Resource Econ.* 153, 165-67 (1997).

[FN133] Robert O. Keohane, *After Hegemony* 104 (1984); see also Wiener, *Global Environmental Regulation*, *supra* note 91, at 735-47. One implication of this argument is that the "Polluter Pays Principle" cannot be the basis for a global regulatory instrument. The Polluter Pays Principle is a guiding premise under most national regulatory schemes. It hinges on the assumption that the external social costs of environmental harm should be paid by the sources of that harm. This "internalizes" those externalities into market decisions. But under consent, polluters cannot be compelled to abate. Each participating country must perceive net benefits from participating. Thus, international environmental treaties must be "Beneficiaries Pay" agreements. See *id.* at 747-55.

[FN134] See Wiener, *Global Environmental Regulation*, *supra* note 91, at 743- 55. I emphasize that international agreements must be Pareto-improving only for those who participate, compared to not participating. Non-participants may be disadvantaged by agreements among others, and even some participants may be worse off compared to the status quo before any agreement. See Lloyd Gruber, *Ruling the World* (2000). All that is required for treaty consent is that joining must seem preferable to sitting out. Those who sit out may indeed incur losses. Similarly, contracts among some individuals may impose externalities on others. This reflects the difference between a consent voting rule and a full unanimity voting rule. See Wiener, *supra*, at 735-55.

[FN135] James M. Buchanan & Gordon Tullock, *The Calculus of Consent* 113 (1962); Robert O. Keohane, *The Demand for International Regimes*, in *International Regimes* 141, 146 (Stephen Krasner ed., 1983).

[FN136] Richard A. Epstein, *Takings? Private Property and the Power of Eminent Domain* (1985). Epstein calls the holdout under a unanimity rule the "single pervert" who seeks to "block the state." *Id.* at 333.

[FN137] Scott Barrett, *A Theory of International Cooperation*, in *Fondazione Eni Enrico Mattei (Working Paper No. 43-98, 1998)*.

[FN138] This concept is advanced and discussed in Wiener, *Global Environmental Regulation*, *supra* note 91, at 742-70.

[FN139] See *id.* at 727 n.187, 748 n.266, 761 n.311; William J. Baumol & Wallace E. Oates, *The Theory of Environmental Policy* 211-28, 279-81 (1988) (noting that abatement subsidies would reduce emissions at each firm but increase the size of the polluting industry and observing that using subsidies could conceivably increase net emissions); Robert E. Kohn, *When Subsidies for Pollution Abatement Increase Total Emissions*, 59 *S. Econ. J.* 77, 84-85 (1992); Wallace E. Oates, *Economics, Economists, and Environmental Policy*, 16 *E. Econ. J.* 289, 290 (1990) ("[I]n a competitive setting, [abatement] subsidies will lead to an excessively large number of firms and industry output.... [I]t is even conceivable that aggregate industry emissions could go up!" (citations omitted)). These costs of securing participation are analogous to the "settlement costs" associated with compensating regulated parties for the burdens of regulation. See Frank I. Michelman, *Property, Utility and Fairness: Comments on the Ethical Foundations of 'Just Compensation' Law*, 80 *Harv. L. Rev.* 1165, 1214-16 (1967). In both cases, compensation creates distortionary incentives. See Lawrence Blume et al., *The Taking of Land: When Should Compensation Be Paid?*, 99 *Q. J. Econ.* 71, 82-84 (1984); Louis Kaplow, *An Economic Analysis of Legal Transitions*, 99 *Harv. L. Rev.* 509, 528-31 (1986); Louis Kaplow, *Government Relief for Risk Associated with Government Action*, 94 *Scandinavian J. Econ.* 525, 528-29 (1992).

Under autocracy or even majority rule, such compensation might be avoided where its distortionary costs are not worthwhile, because the state could simply regulate without compensating. Michelman and Kaplow advocate this result. Under consent, however, there is no way to regulate without compensating because important actors (countries) may simply decline to be governed by the regulation (that is, not participate) unless they are compensated. Thus, under a system of consent, the question is how to design the regulatory instrument to secure participation while minimizing the distortionary costs of compensation.

[FN140]. Hoel & Schneider, *supra* note 132, at 165. The posturing might involve threatened or actual increases in GHG emissions.

[FN141]. Barrett, *supra* note 112, at 280-82.

[FN142]. Aronson, *supra* note 126, at 2160.

[FN143]. Howard F. Chang, An Economic Analysis of Trade Measures to Protect the Global Environment, 83 *Geo. L.J.* 2131, 2162-63 (1995). Chang weighs these costs of trade sanctions against their benefits in addressing the global environmental externality.

[FN144]. Richard N. Haass, Sanctioning Madness, 76 *Foreign Aff.* 74, 77-80 (Nov.-Dec. 1997).

[FN145]. See Harold K. Jacobson & Edith Brown Weiss, Compliance with International Environmental Accords: Achievements and Strategies, in *International Governance on Environmental Issues* 78, 109 (Mats Rolen et al. eds., 1997).

[FN146]. Andrew Hurrell & Benedict Kingsley, The International Politics of the Environment: An Introduction, in *The International Politics of the Environment: Actors, Interests and Institutions* 7-8 (Andrew Hurrell & Benedict Kingsley eds., 1992).

[FN147]. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 760- 63.

[FN148]. This is the approach taken by the Montreal Protocol.

[FN149]. Since this imposes the cost of emissions reductions on these countries--which must either lower their own emissions or buy more allowances-- this is in line with the Beneficiaries Pay principle. This is the strategy used in the Kyoto Protocol to engage Russia's participation. Russia was assigned headroom allowances in exchange for her agreement to join the treaty.

[FN150]. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 765- 67.

[FN151]. Dallas Burtaw & Michael A. Toman, Equity and International Agreements for CO sub2 Containment, 118 *J. Energy Engineering* 122, 131 (1992).

[FN152]. Ironically, this could be a source of disagreement between industry and government in developing countries. Trade might benefit the private sector and undercut bureaucratic elites; official aid might be more desirable to recipient government agencies. This domestic power struggle suggests one possible reason for the opposition to allowance trading sometimes voiced by the government representatives of developing countries, especially those in the throes of the transition from state-run to market economies. See Wiener, *On the Political Economy*, supra note 59, at 780-81.

[FN153]. Burtraw & Toman, supra note 151, at 132.

[FN154]. See Garrett Hardin, *The Tragedy of the Commons*, 162 *Sci.* 1243 (1968). It is conceivable in theory that the opposite premise could hold, i.e. the victims of emissions could have an entitlement to zero externalities. If so, the global environment would be a "closed access" or "anticommons" resource, from which all parties would have a right to exclude all others. See Robert C. Ellickson, *Property in Land*, 102 *Yale L.J.* 1315, 1322 n.22 (1993); Michael Heller, *The Tragedy of the Anticommons*, 111 *Harv. L. Rev.* 621, 667- 79 (1998). But the practical reality is that the global atmosphere has historically been treated as an open-access resource into which all have an entitlement to emit GHGs for free. See Wiener, *Global Environmental Regulation*, supra note 91, at 768 n.331.

[FN155]. The classic exposition of these four remedy options is Guido Calabresi & Douglas Melamed, *Property Rules, Liability Rules and Inalienability: One View of the Cathedral*, 85 *Harv. L. Rev.* 1089 (1972).

[FN156]. Robert Dorfman, *Protecting the Transnational Commons*, in *The Economics of Transnational Commons*, supra note 125, at 210.

[FN157]. In effect, the world of the consent voting rule is a world in which Coasean bargains (voluntary exchanges) can shift entitlements, but Pigouvian taxes and liability awards cannot be employed because there is no state to impose them. See Wiener, *Global Environmental Regulation*, supra note 91, at 768-71, 782-83.

[FN158]. See Wiener, *Global Environmental Regulation*, supra note 91, at 768- 71.

[FN159]. Robert W. Hahn, *Market Power and Transferable Property Rights*, 99 *Q. J. Econ.* 753 (1984).

[FN160]. Daniel J. Dudek & Jonathan B. Wiener, *Joint Implementation, Transaction Costs, and Climate Change*, *OECD/GD* (96) 173, 20-21 (1996).

[FN161]. See David Harrison, Jr., *Considerations in Designing and Implementing an Effective International Greenhouse Gas Trading Program* 22 (1997); Richard Cooper, *Toward a Real Global Warming Treaty*, 77 *Foreign Aff.* 66, 70-72, 74, 78 (Mar.-Apr. 1998).

[FN162]. See Robert W. Hahn, *The Economics & Politics of Climate Change* 43 (1998).

[FN163]. See Ronald H. Coase, *The Problem of Social Cost*, 3 *J.L. & Econ.* 1 (1960). At the limit, the Coase theorem states that in a world of zero transactions costs, the initial assignment is irrelevant to efficiency.

[FN164]. See Barrett, *supra* note 137, at 238; see also David Victor, Eugene Skolnikoff & Kal Raustiala, *The Implementation and Effectiveness of International Environmental Commitments* (1998).

[FN165]. See, e.g., Harrison, Jr., *supra* note 161, at 43.

[FN166]. See Todd Sandler, *Global Challenges* 40-41 (1997).

[FN167]. Barrett, *supra* note 137, at 7.

[FN168]. Richard B. Stewart, Jonathan B. Wiener & Phillippe Sands, *Legal Issues Presented by a Pilot International Greenhouse Gas Trading System* 45 (1996). The U.S. SO sub2 trading system exacts a fine and an offsetting debit against future allowance allocations for violations. See 42 U.S.C. § 7651j (1994).

[FN169]. See Stewart, Wiener & Sands, *supra* note 168.

[FN170]. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 785- 87.

[FN171]. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 785- 87. Fiscal cushioning or other national deviations could also occur under a globalemissions trading system, but could not distort the environmental effectiveness of the quantity limits in the trading regime. *Id.*

[FN172]. Steven Kelmen, *What Price Incentives?: Economists and the Environment* 84-86 (1981); David M. Driesen, *Choosing Environmental Instruments in a Transnational Context*, 27 *Ecology L.Q.* 1 (2000). Driesen claims that my own work has neglected considerations of transnational fairness. This is incorrect. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 720-23, 778-79 (emphasizing the importance of fairness to developing countries in international environmental law).

[FN173]. Wiener, *Global Environmental Regulation*, *supra* note 91, at 720-23, 778-79; Richard L. Revesz, *Federalism and Environmental Regulation: Lessons for the European Union and the International Community*, 83 *Va. L. Rev.* 1341 (1997).

[FN174]. Jose Vargas, *Resources for the Future Weathervane Webpage* (1997), at <http://www.weathervane.rff.org> (visited Dec. 1, 1997). Vargas was then the Environmental Minister of Brazil.

[FN175]. Joaquim Oliveira-Martins et al., *The Costs of Reducing CO sub2 Emissions: A Comparison of Carbon Tax Curves with GREEN* (OECD Economics Dep't Working Paper No. 118, 1992).

[FN176]. Wiener, *Global Environmental Regulation*, *supra* note 91, at 722-23. A distinct concern was that emissions trading might be an immoral means of achieving environmental protection. Critics worry that translating environmental protection into market prices and commodities debases its moral value. See, e.g., Michael J. Sandel, *It's Immoral to Buy the Right to Pollute*, *N.Y. Times*, Dec. 15, 1997, at A23. DOJ argued, however, that environmental degradation is a

failure of markets to take account of environmental impacts; thus, it is not that the environment is too important to leave to markets, but rather that it is too important to leave out of markets. Nor do tradeable allowances amount to a special "license to pollute." Fixed emissions limits and technology standards amount to a license to pollute for free once the limit has been achieved or the equipment installed. Tradeable emissions allowances, by contrast, force the source to pay for every unit of GHG emissions, either by purchasing new allowances or by forgoing the revenue that could be earned from the sale of an allowance. Further, if the immoral act is to cause additional pollution, and if emissions trading is more cost-effective and innovation-enhancing at reducing pollution, then the moralist who opposes emissions trading is herself committing the immoral act. See Wiener, *Global Environmental Regulation*, supra note 91, at 723-26.

[FN177]. See William A. Pizer, *Prices vs. Quantities Revisited: The Case of Climate Change*, in *Resources for the Future* (Discussion Paper, No. 98-02, 1997), available at http://www.rff.org/seminar/files/april_01_98.htm.

[FN178]. See Lawrence H. Goulder, *Environmental Taxation and the "Double Dividend": A Reader's Guide*, 2 *Int'l Tax & Pub. Fin.* 157 (1995).

[FN179]. See Wiener, *Global Environmental Regulation*, supra note 91, at 728-32.

[FN180]. *Id.* at 751-52, 760-70.

[FN181]. *Id.* at 759, 778-79.

[FN182]. *Id.* at 785-87.

[FN183]. *Id.* at 760-63.

[FN184]. See Watson, *Legal Transplants*, supra note 1, at 95 (arguing that legal borrowing is frequent, easy, and the most important source of legal evolution); Watson, *Aspects*, supra note 36, at 335 ("In most places at most times borrowing is the most fruitful source of legal change.... [We should] accept the obvious fact of massive borrowing..."); Alan Watson, *Comparative Law and Legal Change*, 37 *Cambridge L.J.* 313, 321 (1978) ("law develops by transplanting... because the foreign rule was known to those with control over law making and they observed the (apparent) benefits which could be derived from it") [hereinafter *Watson, Comparative Law*]. See generally, Alan Watson, *Society and Legal Change* (1977) [hereinafter *Watson, Society*]; Alan Watson, *Legal Change: Sources of Law and Legal Culture*, 131 *U. Pa. L. Rev.* 1121 (1983) [hereinafter, *Watson, Legal Change*].

[FN185]. See Watson, *Legal Transplants*, supra note 1, at 113 ("the main criterion is simply accessibility"); Watson, *Aspects*, supra note 36, at 350 (emphasizing the role of legal training in shaping and limiting borrowing); Watson, *Comparative Law*, supra note 184, at 321 (emphasizing that lawyers borrow rules they know about); Alan Watson, *The Transformation of American Property Law: A Comparative Approach*, 24 *Ga. L. Rev.* 163, 164 (1990) (emphasizing that borrowing is limited by what law the lawmakers know) [hereinafter *Watson, Transformation*].

[FN186]. Watson, *Nutshells*, supra note 4, at 22 (arguing that scholars are often unaware of legal concepts outside their own legal tradition); Watson, *Aspects*, supra note 36, at 351 (emphasizing the role of luck in determining whether lawyers will be aware of opportunities to borrow, and in the right place at the right time to influence the law); Watson, *Transformation*, supra note 185, at 164 ("Legislators, judges and jurists alike are so blinkered by the legal tradition that

it is hard for them to change the thrust of the law."); Watson, *Legal Transplants*, supra note 1, at 112-13 (emphasizing that legal elites borrow selectively and not from all legal systems).

[FN187]. Watson, *Legal Transplants*, supra note 1, at 99.

[FN188]. See Robert D. Putnam, *Diplomacy and Domestic Politics: The Logic of Two-Level Games*, in *Double-Edged Diplomacy: International Bargaining and Domestic Politics* 431, 431-68 (Peter B. Evans et al. eds., 1993).

[FN189]. See Spiro, supra note 12; Kennedy, supra note 13.

[FN190]. See Bodansky, supra note 39, at 461-74 (describing international precedents for the FCCC and countries' intent to model the FCCC on the Vienna Convention for the Protection of the Stratospheric Ozone Layer). Bodansky notes efforts to model the FCCC on the prior international treaties on the ozone layer and acid rain. See *id.* at 493-94. He also identifies prior international treaties as the "key precedents" for the FCCC and notes countries' desire to have the FCCC "build on the progress achieved in international environmental agreements such as the Montreal Protocol." *Id.* at 512, 554.

[FN191]. See *A Warming World*, *Economist*, June 28, 1997, at 41 (quoting the Dutch environment minister regarding emissions trading: "That's not something that belongs to our culture."); Jonathan Golub, *Introduction and Overview*, in *New Instruments for Environmental Policy in the EU* 1, 19 (Jonathan Golub ed., 1998) (noting that "[c]ompared to the US, where [tradeable] permit systems have been widely used with considerable economic success, the EU has limited experience with this type of new instrument....") (citation omitted); Milo Mason, *Interview: Stuart E. Eizenstat*, 3 *Nat. Resources & Env't* 430, 433 (1998) (quoting U.S. Chief Negotiator Stuart E. Eizenstat as saying "When we first proposed these type [sic] of market-based mechanisms in Kyoto, it was almost a foreign concept to the other governments. They had no experience.").

[FN192]. A persistent issue in our work in 1989-90 was whether the Justice Department should have any role in the international climate negotiations at all. Some in the State Department were receptive, if not initially, then eventually; others were hostile. For example, I was invited by a State Department office director to serve on the U.S. delegation to the Bergen Ministerial meeting in 1990. But a more senior (political appointee) in the State Department was outraged by a Justice Department lawyer infiltrating the delegation and ordered the office director to un-invite me. As it became clear that the White House and Cabinet had adopted our policy proposals on climate change and wanted our participation in the negotiations, and as we developed good working relations with State Department staff, these obstacles eased. I served on the U.S. delegation to virtually all the IPCC meetings and FCCC negotiations during 1990-93, in both the Bush and Clinton administrations.

[FN193]. See William Niskanen, *Bureaucracy and Representative Government* (1972).

[FN194]. When Stewart briefed several White House officials on the proposal, after he had described the environmental and economic advantages of the comprehensive approach, another White House official interjected that this would stop State from negotiating multiple protocols. Thereupon Chief of Staff Sununu called Deputy Secretary of State Lawrence Eagleburger and shouted "One treaty! One treaty!"

[FN195]. See Wiener *On the Political Economy*, supra note 59, at 780-81.

[FN196] My working hypothesis is that as the economics ministries and head-of-state offices of a given country became more involved in the country's climate change policymaking over time, that country's climate policy became more receptive to the principle of cost-effectiveness, the comprehensive approach, and emissions trading. In my experience this was demonstrably true; the policy evolutions in the U.S., Norway, and several other countries support the hypothesis. Further quantitative study on this question would be useful.

[FN197] See Watson, *Legal Transplants*, supra note 1, at 99; Watson, *Aspects*, supra note 36, at 346 (suggesting that advertising borrowing lends legitimacy to the legal change).

[FN198] See Szasz, supra note 10. This may be true across administrations as well as across countries. Thus the United States' continued advocacy of the two ideas proposed in 1989 is now portrayed as "new ideas" rather than as a borrowing from prior years. See supra notes 58-59 (citing N.Y. Times articles in August 2000 on U.S. advocacy of multi-gas approach and credit for sinks). If that euphemism gets good ideas enacted into policy, so be it. Perhaps however the recent labeling of these ideas as "new" comes not from any political desire to suppress the fact of borrowing, but rather from the short memory of the news media.

[FN199] See Spiro, supra note 12; Kennedy, supra note 13.

[FN200] See Watson, *Legal Transplants*, supra note 1, at 112; Watson, *Comparative Law*, supra note 184, at 326; Max Rheinstein, *Types of Receptions*, 5 *Annales de la Faculté de Droit d'Istanbul* 31, 37-40 (1956), reprinted in Max Rheinstein, *I Collected Works* 261, 266-68 (Hans G. Leser ed., 1979) (attributing the point to Max Weber's theory of "honoratiories" in cross-social diffusion).

[FN201] See Tony Brenton, *The Greening of Machiavelli: The Evolution of International Environmental Politics* 256-57 (1994); A. Dan Tarlock, *The Role of NGOs in the Development of International Environmental Law*, 68 *Chi.-Kent L. Rev.* 61 (1992); cf. Spiro, supra note 12 (arguing that the role of NGOs in international law and international relations theory is important but theoretically murky).

[FN202] These included Dick Stewart at DOJ, and Dick Schmalensee, David Bradford, and Joe Stiglitz at CEA. I was a non-political appointee heading toward an academic career, and all the political appointees for whom I worked on climate policy--Dick Stewart, David Bradford, Allan Bromley (OSTP), Joe Stiglitz, Laura Tyson (CEA)--were academics serving stints in public life.

[FN203] See Oliver Williamson, *The Economic Institutions of Capitalism* (1992).

[FN204] See Josef Schumpeter, *Capitalism, Socialism and Democracy* (1952).

[FN205] See Watson, *Legal Transplants*, supra note 1; Ewald, supra note 7; Heim, supra note 7; Kahn-Freund, supra note 7.

[FN206] See Harold Demsetz, *Toward a Theory of Property Rights*, 57 *Am. Econ. Rev.* 347 (1967). An earlier version of this view is William Blackstone, 2 *Commentaries on the Laws of England* *9 (1766) ("Necessity beget property"). Claims that the common law evolves efficiently, e.g. George Priest, *The Common Law Process and the Selection of*

Efficient Legal Rules, 6 J. Legal Stud. 65 (1977), rely on a judicial actor who does not play a significant role on the international legal stage. See *infra* notes 234-36.

[\[FN207\]](#). Hardin, *supra* note 154.

[\[FN208\]](#). See Wiener, On the Political Economy, *supra* note 59, at 789-91 (discussing similarities between legal evolution in local and global contexts).

[\[FN209\]](#). See Andrew Hurrell & Benedict Kingsbury, The International Politics of the Environment: An Introduction, in *The International Politics of the Environment* 8 (Andrew Hurrell & Benedict Kingsbury eds., 1992); James E. Krier, The Tragedy of the Commons, Part Two, 15 Harv. J.L. & Pub. Pol'y 325, 338 n.44 (1992); Frank Michelman, Ethics, Economics, and the Law of Property, 24 Nomos 3, 30-31 (1982); Carol M. Rose, Property as Storytelling, 2 Yale J.L. & Human. 37 (1990).

[\[FN210\]](#). See Robert Axelrod, *The Evolution of Cooperation* (1984); Keohane, *supra* note 133.

[\[FN211\]](#). Robert Ellickson refers to this as "multiplex" relations. See Robert Ellickson, *Order Without Law* (1993).

[\[FN212\]](#). Alan Watson, *The Evolution of Law* 118-19 (1985).

[\[FN213\]](#). Watson, *Aspects*, *supra* note 36, at 335 (emphasis added).

[\[FN214\]](#). Watson, *Comparative Law*, *supra* note 184, at 321.

[\[FN215\]](#). Watson, *Nutshells*, *supra* note 4, at 2; see also Ewald, *supra* note 7 (comparing Watson's views to theories that law responds to social needs).

[\[FN216\]](#). Watson, *Legal Transplants*, *supra* note 1, at 108.

[\[FN217\]](#). See Ewald, *supra* note 7 (juxtaposing Watson's view versus those of Kahn-Freund, Montesquieu, Marx, Priest, and others who believe that borrowing is inadvisable because law must "mirror" its society); Kahn-Freund, *supra* note 7; Charles-Louis de Secondat de Montesquieu, *The Spirit of the Laws*, pt. 1, bk. 1, ch. 3, at 105 (David Wallace Carrighers ed. & trans., 1977) ("Laws should be so appropriate to the people for whom they are made that it is very unlikely that the laws of one nation can suit another.");

[\[FN218\]](#). The fact that legal borrowing occurs across widely different societies does not, however, show that legal borrowing is independent of efficiency or social needs; nor does the importance of law serving a society's needs show that legal borrowing is inadvisable. Both sides in the debate over transnational borrowing have missed the possible role of efficiency in motivating borrowing. Borrowing could well be motivated precisely by the desire to serve society's interests, or at least could be stimulated indirectly by social demands. See Mattei, *supra* note 6 (presenting a model of efficient legal borrowing). Borrowing could well be efficient where the borrowed legal rule does advance the receiving society's interests. Even Watson sometimes seems to say that legal borrowing reflects social needs. He adduces nine

factors for the success of a legal transplant, among them the social need for the rule and the political context of the receiving state. See Watson, *Comparative Law*, supra note 184, at 322. He also cites "law-shaping lawyers" as one of these nine factors for success--similar to my suggestion above of the role of entrepreneurial borrowers. He also cedes that social need might be a real but simply unstated reason for legal borrowing. See Alan Watson & Khaled Abou El Fadl, *Fox Hunting, Pheasant Shooting, and Comparative Law*, 48 *Am. J. Comp. L.* 1, 2-3 (2000) (jurists who undertook legal borrowing were typically not "unaware of social, political and economic realities"; rather they "refrained from using social, political and economic realities as an argument for their legal opinion;... their reasoning was highly abstract, remote in appearance from these realities, and with a life of its own.")

[FN219]. See Buchanan & Tullock, supra note 135; Wiener, *Global Environmental Regulation*, supra note 91, at 735-47.

[FN220]. More complex models of international lawmaking do not detract from this proposition. As noted above, see supra note 188, international negotiations are a multi-level game. For example, countries' foreign ministries could have agreed to a provision that favored the foreign ministry over other parts of their home government. But for the reasons of institutional turf described above, this possibility seems to cut against borrowing from national law, not in its favor, and hence requires borrowing from national law to offer even greater efficiency gains in order to surmount the otherwise embedded institutional resistance from foreign ministries.

[FN221]. Watson & El Fadl, supra note 218, at 3; Alan Watson, *From Legal Transplants to Legal Formants*, 43 *Am. J. Comp. L.* 469 (1995) (arguing that legal rules are devised by elite jurists, not necessarily or closely responsive to social needs).

[FN222]. See Mancur Olson, *The Logic of Collective Action* (1965); William N. Eskridge, Jr., *Politics Without Romance*, 74 *Va. L. Rev.* 275 (1988) (concentrated gains, distributed harms may yield adoption of inefficient law); Nathaniel O. Keohane et al., *The Choice of Regulatory Instruments in Environmental Policy*, 22 *Harv. Envtl. L. Rev.* 313 (1998) (noting that legislative politics typically does not adopt efficient environmental policy instruments); cf. Watson, *Comparative Law*, supra note 184, at 321, 326 (noting that elites choose to borrow law and emphasizing that concentrated gains and distributed harms may yield borrowing of inefficient law).

[FN223]. See Mertus, supra note 6, at 581-82 ("the legal transplant process is generally marked by some form of coercion,... states that adapt their laws to conform with the laws of politically powerful states are rewarded... while those that do not are penalized." (citations omitted)).

[FN224]. See supra note 28.

[FN225]. See Wiener, *On the Political Economy*, supra note 59, at 749, 768- 71, 782-94.

[FN226]. Alan Watson, *The Origins of the Code Noir Revisited*, 71 *Tul. L. Rev.* 1041, 1042 (1997) (citing Vernon V. Palmer, *The Origins and Authors of the Code Noir*, 56 *La. L. Rev.* 363, 390 (1995)).

[FN227]. Watson, *Transformation*, supra note 185, at 217-18.

[FN228]. See Oscar S. Chase, *Legal Processes and National Culture*, 5 *Cardozo J. Int'l & Comp. L.* 1, 1 (1997) (culture); First, supra note 27 (implementation institutions); Geller, supra note 25, at 201-02, 214 (1994) (culture, values, and

geography); Kahn-Freund, *supra* note 7, at 11-13 (political structure, distribution of power, and role of interest groups); Julie Mertus, *Mapping Civil Society Transplants: A Preliminary Comparison of Eastern Europe and Latin America*, 53 *U. Miami L. Rev.* 921, 930 (1999) (norms and perceptions); Mertus, *supra* note 6, at 583-84 (local norms). If national regulatory culture does vary, that may raise obstacles to transnational borrowing. See Mikael S. Anderson, *Governance by Green Taxes: Making Pollution Prevention Pay* (1994); Ronald Brickman et al., *Controlling Chemicals* (1985); David Vogel, *National Styles of Regulation: Environmental Policy in Great Britain and the United States* (1986). But see Jonathan B. Wiener & Michael D. Rogers, *Comparing Precaution in the U.S. and Europe* (forthcoming) (finding no simple pattern of risk regulation to differentiate the United States and Europe).

[FN229]. See Watson, *Evolution*, *supra* note 212, at 118-19; Watson, *Legal Transplants*, *supra* note 1, at 95; Watson, *Society*, *supra* note 184, at 98-111; Watson, *Legal Change*, *supra* note 184; Watson, *Aspects*, *supra* note 36 ("In most places at most times borrowing is the most fruitful source of legal change.").

[FN230]. See Watson, *Comparative Law*, *supra* note 184, at 322.

[FN231]. Compare Watson, *Legal Transplants and Law Reform*, 92 *Law Q. Rev.* 79, 79 (1976) (arguing that knowledge of the political-legal system of the donor state is not necessary for successful borrowing, and citing as evidence the examples of European borrowing from Roman law and Japanese borrowing from French law), with *id.* at 81 (arguing that a legal transplant cannot succeed if inimical to the political, social, and economic circumstances of the receiving state).

[FN232]. Even in transnational legal borrowing, these obstacles may be receding. See Jackson, *supra* note 6 (arguing that culture is globalizing, so it is becoming less of an obstacle to legal transplants). There may also be an emerging global "culture" of international norms. See Kennedy, *supra* note 13.

[FN233]. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 737- 42.

[FN234]. See Gillian Hadfield, *Bias in the Evolution of Legal Rules*, 80 *Geo. L.J.* 583 (1993); Eric Talley, *Precedential Cascades: An Appraisal*, 73 *S. Cal. L. Rev.* 87 (1999). Likewise, Alan Watson observes that once a legal system "becomes used as a quarry, it will... be borrowed from again, and the more it is borrowed from, the more the right thing to do is to borrow from that system, even when the rule that is taken is not necessarily appropriate." Watson, *Legal Transplants*, *supra* note 1, at 113.

[FN235]. See *supra* note 222 (citing Mancur Olson, William Eskridge).

[FN236]. See Wiener, *On the Political Economy*, *supra* note 59, at 782-94.

[FN237]. Note that in 1989, comprehensiveness and emissions trading were not yet legal concepts "deeply rooted" in U.S. law. See Kahn-Freund, *supra* note 7, at 12 (if legal concepts are deeply rooted in the donor state, that makes it difficult to transplant them to other states). Comprehensiveness was the aspiration but almost never the reality of American environmental law. See *Risk vs. Risk*, *supra* note 58; Guruswamy, *supra* note 80. And the U.S. had just begun to employ emissions trading in the 1980s, as had New Zealand; American politics had previously resisted adoption of market-based incentive instruments. See Keohane et al., *supra* note 222.

[FN238]. See Inge Kaul et al., *Global Public Goods* (1999); Wiener, *Global Environmental Regulation*, supra note 91, at 689-92.

[FN239]. Note that the U.S. laws regulating the handling of hazardous wastes (RCRA) and takings of endangered species (ESA) restrict harmful activity wherever it occurs, regardless of whether the physical activities would cross state borders; they regulate externalities that affect interstate relations, not interstate trade alone. This analysis also identifies a flaw in CITES and in the Biodiversity Convention and its Biosafety Protocol: the real issue is a global public good (biodiversity conservation), but these treaties address only interjurisdictional trade instead of addressing the more salient causes of biodiversity loss within countries (e.g. habitat loss via clearing forests for agriculture, ranching, mining, timber) that cause global externalities without physical movement of goods across borders.

[FN240]. See U.S. Dep't of Justice, supra note 53.

[FN241]. See Ken Kollman et al., *Decentralization and the Search for Policy Solutions*, 16 *J.L. Econ. & Org.* 102 (2000).

[FN242]. In the climate change treaty process, the IPCC performed a useful service that might be seen as centralized international analysis, but in reality the IPCC was organizing the borrowing of nationally sponsored ideas. The IPCC funded no original research; it coordinated an assessment of research already funded largely by national governments, especially the U.S. Also, the IPCC had no expertise of its own in environmental law, policy, or economics. In 1988-93, during the FCCC negotiations, the IPCC did not even have an economics working group (which was added in 1993).

[FN243]. Even under national majority rule, the same insight can apply, where side payments are needed to attract participation in the majority coalition. The adoption of SO₂ trading system in 1990 includes several side payments added to secure votes from key states. See Wiener, *Global Environmental Regulation*, supra note 91, at 765 n.323. And the new NO_x trading system in the northeast U.S. is built on the consent of states.

[FN244]. See supra note 139 (describing perverse effects of subsidies or compensation for abatement).

[FN245]. In any case, the higher transaction costs of project-based CDM credits may ensure that they trade at a lower price than formal allowances would. See Dudek & Wiener, supra note 160. And rules for "buyer liability" under Article 12 (but not under Article 17, where emissions limits will be enforced through national emissions inventories) could also make CDM credits less attractive to buyers than formal allowances. These steps would help distinguish CDM credits from the more environmentally dependable commodity of formal allowances, and would also encourage developing countries to join the formal cap-and-trade system (with headroom allowances).

[FN246]. Along these lines, Jeffrey Frankel--a member of the CEA in the second Clinton administration--proposes that developing countries accept tradeable emissions limits at the level of their business-as-usual forecasts (one version of the headroom allowances I have described), to be phased in as they grow wealthier (which is consistent with the Beneficiaries Pay framework I have outlined). See Jeffrey Frankel, *Brookings Policy Memo*, Apr. 2000. Yet the actual negotiations have not moved to engage participation by developing countries. See Revkin, *Odd Culprits*, supra note 59. This may be the result of a blinkered U.S.-E.U. tug of war, a failure to understand "participation efficiency," or a willful effort to use the climate negotiations to raise rivals' costs. See Wiener, *On the Political Economy*, supra note 59.

[FN247]. See Richard J. Lazarus, *Restoring What's Environmental About Environmental Law in the Supreme Court*, 47 *UCLA L. Rev.* 703 (2000); Richard J. Lazarus, *Thirty Years of Environmental Protection Law in the Supreme Court*,

17 Pace *Envtl. L. Rev.* 1 (1999).

[FN248]. See *Risk vs. Risk*, *supra* note 58.

[FN249]. See Dudek, Stewart & Wiener, *supra* note 8, at 6. International law should borrow the best ideas from national law, not just the most prominent. Thus, although I have urged borrowing of emissions trading into the international climate treaties, I would not urge international law (or other countries) to copy some other U.S. legal concepts--such as the Delaney clause or the fragmented structure of U.S. institutions.

[FN250]. Another might be the performance-based flexible environmental "covenants" developed in the Netherlands. See *Environmental Contracts and Covenants* (Jan M. Van Dunne ed., 1993); Jan W. Biekart, *Environmental Covenants Between Government and Industry in the Netherlands*, 4 *Rev. Eur. Community & Int'l Env'tl. L.* 141 (1995).

[FN251]. Alan Watson foreshadowed the move from horizontal to vertical legal borrowing:

Just as very few people have thought of the wheel, yet once invented its advantages can be seen and the wheel used by many, so important legal rules are invented by a few people or nations, and once invented can readily be appreciated, and the rules themselves adopted for the needs of many nations.

Watson, *Legal Transplants*, *supra* note 1, at 100.

[FN252]. See Jeremy Bentham, *Theory of Legislation* 112-13 (4th ed. 1882), quoted in Jesse Dukeminier & James E. Krier, *Property* 57 (3rd ed. 1993) ("the least agreement among savages to respect the acquisitions of each other" is "law"); Buchanan & Tullock, *supra* note 135 (on the spectrum of voting rules); Wiener, *Global Environmental Regulation*, *supra* note 91, at 739 n.232 (international law is real law, but based on a different voting rule); Wiener, *On the Political Economy*, *supra* note 59, at 789-91 (international law is real law, but more akin to the consensual law of local neighborhoods accomplished through mutually restrictive covenants than to national legislation).

[FN253]. See Spiro, *supra* note 12, at 578; Tarlock, *supra* note 22, at 759.

[FN254]. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 754 & n.283, 765 n.323.

[FN255]. For recent appraisals, see David Osborne, *Laboratories of Democracy* (1988); Kollman et al., *supra* note 241. See also Ladas, *supra* note 25 (observing laboratory approach in evolution of international intellectual property law).

[FN256]. International GHG emissions trading without domestic emissions trading could prove cumbersome. See Wiener, *Global Environmental Regulation*, *supra* note 91, at 787-92 (arguing that national implementation of regulatory approaches incompatible with emissions trading could frustrate international emissions trading); Robert W. Hahn & Robert N. Stavins, *What Has Kyoto Wrought?* (unpublished working paper on file with Mr. Hahn, Director of AEI-Brookings Joint Center for Regulatory Studies, Feb. 25, 1999, available at <http://www.rff.org>) (cautioning that international GHG emissions trading may not succeed if there is not also domestic GHG emissions trading).

[FN257]. See *Risk vs. Risk*, *supra* note 58.

[FN258]. See William Clark et al., *Useful Knowledge for Climate Change Policy* (1990).

[\[FN259\]](#). Watson, Aspects, *supra* note 36, at 350 (1996).

[\[FN260\]](#). Watson, Legal Transplants, *supra* note 1, at 118.

[\[FN261\]](#). See Jack B. Weinstein, The Ghosts of Process Past: The Fiftieth Anniversary of the Federal Rules of Civil Procedure and Erie, 54 *Brook. L. Rev.* 1, 25 (1988).

[\[FN262\]](#). On the need to adapt borrowed law, see Watson, Legal Transplants, *supra* note 1, at 7, 17, 27, 99. On the need for multidisciplinary analysis of the complex social context of legal evolution, see Clark, *supra* note 38.

[\[FN263\]](#). Watson, Legal Transplants, *supra* note 1, at 99.

[\[FN264\]](#). See Carol M. Rose, The Several Futures of Property: Of Cyberspace and Folktales, Emission Trades and Ecosystems, 83 *Minn. L. Rev.* 129, 163-66 (1998); Richard B. Stewart, Privprop, Regprop, and Beyond, 13 *Harv. J.L. & Pub. Pol'y* 91, 93 (1990).

[\[FN265\]](#). Carol Rose dubs these "regulatory property" ideas "hybrid property," because they derive from top-down administrative regulation rather than bottom-up from judicial decisions. See Rose, *supra* note 264, at 163. In that vein, they resemble the "hybrid" offspring of cross-species interbreeding ("hybridization"), which succeed only when a change in the environment creates a new niche for the hybrid's attributes. See Weiner, Finch, *supra* note 37. At the international level, these legal constructs are "hybrid-hybrid," because they derive not only from administrative regulation, but also from the consensual group norms of the international treaty-making community (a process usually juxtaposed to formal property rights, see, e.g., Carol M. Rose, Expanding the Choices for the Global Commons: Comparing Newfangled Tradable Allowance Schemes to Old-Fashioned Common Property Regimes, 10 *Duke Envtl. L. & Pol'y F.* 45 (1999)). Thus international tradeable emissions allowances are at the frontier of a new "global hybrid regprop."

[\[FN266\]](#). According to the U.S. Supreme Court,

From the infancy of copyright protection, some opportunity for fair use of copyrighted materials has been thought necessary to fulfill copyright's very purpose.... For as Justice Story explained,

[i]n truth, in literature, in science and in art, there are, and can be, few, if any, things, which in an abstract sense, are strictly new and original throughout. Every book in literature, science and art, borrows, and must necessarily borrow, and use much which was well known and used before.

Campbell v. Acuff-Rose Music, 510 U.S. 569, 575 (1994) (quoting *Emerson v. Davies*, 8 F. Cas. 615, 619 (No. 4,436) (CCD Mass. 1845) (footnote omitted; emphasis added)).

[\[FN267\]](#). See *supra* note 1.

END OF DOCUMENT