

THE POLITICS OF INTERNATIONAL ENVIRONMENTAL MANAGEMENT



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Contents

I.	Introduction <i>Arild Underdal</i>	1
II.	The Interest-Based Explanation for International Air Pollution Control <i>Detlef Sprinz and Tapani Vaahtoranta</i>	13
III.	Domestic Politics and European Acid Rain Regulation <i>Detlef Sprinz</i>	41
IV.	The Role of Intergovernmental Organizations in the Formation and Evolution of International Environmental Regimes <i>Martin List and Volker Rittberger</i>	67
V.	National Science and International Policy <i>Albert Weale and Andrea Williams</i>	83
VI.	Leadership in International Environmental Negotiations: Designing Feasible Solutions <i>Arild Underdal</i>	101
VII.	Understanding the Formation of International Environmental Regimes: The Discursive Challenge <i>Olav Schram Stokke</i>	129
VIII.	Domesticating International Commitments: Linking National and International Decision-Making <i>Kenneth Hanf and Arild Underdal</i>	149

I. Introduction

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Many of the major policy challenges facing governments today are in some sense *collective* problems, calling for *joint* solutions. This also applies to the issue-area of environmental management, and to Europe at least as much as to any other region. However, even when effective solutions can only be reached through joint efforts, voluntary cooperation seems quite often to be hard to establish and maintain. This makes it all the more important to be able to understand the conditions for ‘success’ and the causes of ‘failure’ in international environmental problem-solving.

This volume addresses some aspects of that general question. We shall pursue our theme through three consecutive stages of the policy process: the formation of the national policy positions that serve as inputs into international negotiations, the aggregation of those preferences and positions into joint decisions, and the (domestic) implementation of international agreements.

Understanding Government Preferences and Positions

One major question pertaining to the first of these stages is to what extent the preferences and positions that governments bring to international negotiations can be predicted and understood in terms of some version of the *unitary rational actor* model. The core assumption common to such models is that states can be conceived of as unitary actors maximizing net national welfare. Applied to environmental politics, this assumption implies that a state is expected to pursue environmental protection up to the point where its marginal costs of abatement equals its own marginal damage costs, and no further. In negotiations over alternative measures, governments are supposed to prefer that option which maximizes its own net gain.

The general implications of this model are straightforward. The most *progressive* countries – in terms of unilateral as well as collective action – will be those suffering high damage costs relative to their own abatement costs. Conversely, the *laggards* will be those with high abatement costs relative to damage costs. In the

case of *transfrontier* pollution the relationship between own damage costs and abatement costs will depend not only on one's own emissions, (ecological) vulnerability to pollution, and the costs of reducing one's own emissions, it will be also affected by the 'balance of pollution exchange' *vis-à-vis* other countries. A low damage costs/abatement costs ratio may be caused by high 'externalization' of damage costs. Conversely, a high damage costs/abatement costs ratio may be due to the net 'import' of pollution. Translated into more specific hypotheses, the model predicts that the champions of *international* regulations will be those countries that are (a) most vulnerable to pollution, (b) have the lowest abatement costs, and/or (c) have the most negative 'pollution exchange balances'. Conversely, the laggards will be those that are relatively invulnerable to pollution, have high abatement costs, and/or are net 'exporters' of pollution.

Moreover, in order to be able to apply such models to empirical cases, the assumption is usually made that abatement as well as damage costs can be derived from 'objective' characteristics of the country itself and its relationship to others. The calculus may certainly be complex and call for the most sophisticated methods of valuation. And even when we use the best information and the most powerful techniques available, considerable margins of uncertainty may remain. Unitary rational actor models do not, however, allow for any 'messy' interference from politics; the logic of the models is supposed to apply equally well across all types of political systems, regime ideologies, and political processes. Faced with the same objective incentives, all governments would make the same choice. The parsimony and transparency inherent in these models make them particularly attractive for purposes of extensive empirical studies.

In Chapter II, **Detlef Sprinz** and **Tapani Vaahtoranta** explore the predictive power of such a model in two empirical settings. More specifically, they test predictions about negotiation profiles derived from a country's position in what might be called the 'pollution structure' against empirical evidence from the negotiations leading to the Helsinki Protocol on sulphur dioxide emissions and those leading to the Montreal Protocol on substances that deplete the stratospheric ozone. The general conclusion is that their model predicts policy profiles quite well. There are, however, a few notable exceptions, and the question arises whether these can be accounted for without resorting to more complex models, in which institutions and politics are included as endogenous factors.

What may be called *domestic politics* models focus on societal *demand* for environmental quality and support for environmental policies, governmental *supply* of policies for protecting environmental resources, or on the interplay between these two factors. Both are presumably affected by 'objective' damage and abatement costs, but a basic assumption common to domestic politics models is that neither demand nor supply can be adequately predicted or understood simply as a derivative of some 'objective' calculation of national, material interests. Proponents of

such models do not, of course, claim that policy-makers do not consider aggregate costs and benefits to their nation. Rather, their main argument is that political processes produce outputs that can deviate systematically, and in ways that can be predicted, from those that would maximize ‘net national welfare’. In politics some concerns tend to be amplified beyond their ‘objective’ proportions, while others may be downplayed. And influence over public policy will not necessarily be distributed in proportion to ‘affectedness’ or in some other way that reflects the impact of those policies on the national economy. At the very least, they would argue, no one has yet come up with a method whereby policy decisions can be derived in a straightforward manner from some ‘objective’ notion of national welfare.

Looking more specifically at the demand and support side, one could point to several domestic ‘sources’ that can easily upset such a derivation. For one thing, different societies or cultures may hold different basic values and subscribe to different beliefs. For example, if we study the public discussion about the relationship between man and nature we can find more or less clearcut ‘preservationist’ as well as ‘conservationist’ approaches. Anthropologists tell us that certain ‘primitive’ societies conceive of the man-nature relationship in terms that are quite different from those dominating the discourse in Western industrialized societies, and Boehmer Christiansen (1992) even points out interesting differences in this regard between Germany and the UK. Second, other things being equal, it seems that the relative priority given to the value of environmental quality tends to increase with affluence. For the poor meeting the basic material needs of today is likely to be the paramount concern, while the ‘rich’ can afford to worry about such ‘luxury goods’ as the recreational or intrinsic value of nature, and about what might happen in some distant future. In terms familiar to economists, we might say that the ‘indifference curves’ and the ‘discount rates’ relevant to the demand for environmental quality may differ significantly from one society to another. Third, the strength with which societal concerns and demands are articulated depends upon the existence, capabilities and incentives of available *agents* such as non-governmental organizations (NGOs), political parties, and the media. Everything else being the same, we would expect a government to be more responsive to focused demands articulated by powerful agents than to some equally widespread diffuse concern for which no spokesman or coordinator of collective action can be identified. The availability and strength of societal agents for environmental concerns may clearly vary for reasons unrelated to the relationship between damage and abatement costs. To give just one example: the configuration of NGOs and political parties existing at any one point in time tends to reflect conflicts that were salient and coalitions that were formed at critical junctures in the earlier history of that particular society. *Today’s* ecology of organizations tends to a significant extent to reflect *yesterday’s* concerns. History is with us not only in the form of cognitive ‘lessons’, but also in the form of institutional relics.

Similarly, governmental *supply* of environmental policies can more generally be affected by, *inter alia*, institutional structure, regime ideology, and characteristics of the political system. First of all, we do know that the *institutional capacity* for environmental governance differs significantly from one state to another. Institutional capacity is a complex construct, and much remains to be done before we can identify its constitutive elements with a fair amount of precision. In a very simple model, however, it may be conceived of as a function of properties of the government itself and its relationship to society in general, and to the social groups directly affected by its regulation in particular. Among the characteristics of government that seem to be important in this context are the scope and depth of formal competence vested in the ‘environmental’ branch of government, the amount of resources (i.e. personnel and funds) allocated to such agencies, the ‘political clout’ of their leaders, and the ‘vertical unity’ (level of centralization) of government itself. Moreover, institutional capacity for governance depends critically on the autonomy of government *vis-à-vis* the ‘regulatee’.

Second, we need not look towards military dictatorships or clientelist governments of Third World countries to realize that the general political ideology and social background of the elite occupying government positions (i.e. the governing regime itself) can make a significant difference. Suffice it here to remind ourselves that the shift from the Carter to the Reagan administration led to some shifts in political priorities; *inter alia*, so that the ‘indifference curve’ between economic growth and environmental quality seems to have shifted in favor of the former.¹ The Reagan administration also subscribed to another set of beliefs with regard to the efficiency and equity of different policy instruments, favoring market incentives over governance by means of directive.

Third, there are strong indications that the basic structure of the political system can itself affect the supply of environmental policies. More specifically, it seems that ‘closed’ (i.e. totalitarian and authoritarian) political systems tend not only to be less responsive to societal demands, but also that they are inclined to concentrate efforts on the pursuit of ‘hard’ objectives, such as military security or economic growth, rather than ‘soft’ values such as environmental quality or human rights. Although sound arguments may be given for the proposition that severe problems of resource scarcity or environmental degradation call for a Leviathan-type of state (cf e.g. Gurr, 1985), the environmental record of contemporary ‘closed’ polities seem by and large to be inferior to those of democratic systems of government. In other words, although it may take a strong state to solve severe environmental problems, most strong states seem inclined to concentrate on other kinds of objectives. Even among democratic polities significant differences in policy styles can be found. Thus, Lundqvist (1980) found that the more open and conflict-oriented system of the US produced more immediate and substantial responses to environmental problems than the more closed and consensus-oriented Swedish system.

Demand and supply side mechanisms *interact* in more or less subtle ways. For one thing, governments should not be seen merely as passive ‘respondents’ to societal demands; they typically play an active part in shaping and moulding demands and support as well. Second, the impact of a certain input from society depends not only on the ‘strength’ of that input itself, but also on the responsiveness as well as the vulnerability of government. Other things being equal, the more favorably inclined a government is towards the substance of a demand or towards its sender, and the more dependent a government is on the support of the sender, the more likely that it will respond favorably. Third, political processes often produce issue linkages based on strategic or tactical considerations rather than on inherent functional interconnectedness. The policy *context* into which a particular issue-area or problem is defined can make a significant difference with regard to, *inter alia*, the (kinds of) perspectives that are considered relevant or ‘appropriate’ and the (kinds of) actors that have access to policy-making processes. All this suggests that governmental institutions and political processes *can* leave their own imprint on policies. What I have called ‘domestic politics’ approaches are designed to help us understand how politics shape policy.

Now, as used here, the ‘domestic politics’ label covers a wide range of models. We have no ambition to provide a survey, let alone a synthesis, of all these. Rather, what we can offer here is an empirical test of one specific version, focusing mainly on societal demand and support for environmental policies. Examining one of the protocols under the LRTAP Convention, **Detlef Sprinz** finds varying degrees of support for specific propositions relating domestic mass pressure and industrial interests to governmental support for international measures of environmental regulation (Chapter III). The fact that the cases examined in this analysis overlap in part with those used to examine the unitary actor model in Chapter I provides the reader as well as the author with a common empirical testing ground against which the merits of the two approaches can more easily be compared. More generally, systematic empirical testing of propositions derived from alternative models is a research strategy that seems particularly useful for the purpose of evaluating contending approaches.

From National Positions to Joint Decisions

The road from a set of national preferences and positions to some effective joint solution can be long and thorny, indeed. Effective cooperative solutions seem to be hard to establish even when the ‘need’ for such measures is generally acknowledged. This observation has led students of international cooperation to suggest that the outcome of problem-solving efforts is subject to two sombre ‘laws’ of politics. One of these – ‘the law of the least ambitious programme’ – says that

whenever joint decisions can be made only by agreement among those to whom the decision would apply, and each option is considered only on its own merits, cooperation tends to be limited to what the least enthusiastic ‘pivotal’ party can accept (Underdal, 1980). The other (let me refer to it as ‘the iron law of bargaining’) is even more pessimistic: any process of (distributive) bargaining tends to spoil or block the integrative potential it has ostensibly been undertaken to tap (Johansen, 1979). Thus, according to the later proposition, there is a very real risk that the outcome will even fall *below* what the least enthusiastic party would prefer.

At the most general level, the outcome of collective decision-making processes can be conceived of as a function of *problem structure* (‘benignity’) and *problem-solving capacity*. Clearly, some problems are politically more ‘benign’ than others, and hence easier to solve. Similarly, some institutions or systems seem to provide its members with more effective ‘mechanisms’ for problem-solving than others. The challenge to research is to specify these very general propositions. Suggesting that some problems are harder to solve than others is helpful only if we can specify *which* kinds of problems are ‘malign’ and *what* makes them so. Likewise, the proposition that ‘success’ depends on problem-solving capacity becomes interesting only if we can specify *which* institutions are the most effective devices, and *what* makes one particular institution more capable of solving collective problems than another.

Thanks in large part to the development and application of game theory constructs to the analysis of voluntary cooperation, we are able to determine the political ‘malignancy’ of different problem structures with a fair amount of precision. Less is known about what constitutes and determines problem-solving capacity. Since the latter is also the only of these factors that can, at least in principle, be shaped through deliberate ‘engineering’, we have decided to concentrate our efforts here on exploring some dimensions of problem-solving capacity.

Now, what is required to solve a problem may depend on the character of that problem. By implication, problem-solving capacity can be determined precisely only with reference to a particular category of problems or functions. When solutions are to materialize as collective decisions, we can, however, at a very general level conceive of the political capacity for problem-solving as a function of three major determinants: (1) the institutional setting, including ‘the rules of the game’; (2) the distribution of power among the actors involved; and (3) the skill and energy available for designing and ‘marketing’ cooperative solutions.

The term *institutional setting* is used here as a label for two different notions of institutions, viz. ‘institutions-as-arenas’ and ‘organizations-as-actors’. The notion of *arena* seems to correspond to what Oran Young has called ‘the procedural component’ of regimes, defined as ‘recognized practices for handling situations requiring social and collective choice’ (Young, 1989, p. 18). Arenas regulate the access of actors to problems and the access of problems to decision games. Moreover,

they specify the official purpose as well as the rules, location and timing of the game. Institutions-as-arenas can be described by answering the question: *who* are to deal with *which problem(s)*, *how*, *when* and *where*?

Arenas differ in terms of, *inter alia*, rules of access, decision rules, and rules of procedure. For example, membership in some cases is restricted to countries that satisfy certain criteria (and pay its membership fee). The rules of access to particular (executive) bodies are often more restrictive than criteria for membership of the organization as such. Consensus is the decision rule most often subscribed to in intergovernmental organizations, but a number of organizations have some provisions for decision-making by voting. The decision rule is clearly an important determinant of the capacity to aggregate preferences; other things being equal, aggregation capacity reaches its maximum in hierarchical structures, and is at its minimum in systems requiring positive unanimity. Thus, the ‘anarchical’ structure of the international political is generally seen as a major constraint. Finally, we know that procedural rules may differ in important respects, e.g. with regard to differentiation into subprocesses, the opportunities for adding and de-coupling issues, and the amount of discretion vested in committee or conference chairs in, *inter alia*, drafting proposals or summarizing conclusions.

While all organizations can serve as arenas, only a subset can also qualify as significant *actors* in their own right. International organizations can be considered actors to the extent that they provide independent inputs into the problem-solving process, or somehow amplifies the output of that process. To qualify as actor, an organization must have a certain minimum of internal coherence (unity), autonomy *vis-à-vis* other actors (notably member states), political resources, and in fact engage itself in some distinct external activity. IGOs, and specific bodies within IGOs, clearly vary considerably in terms of scores on these dimensions. Thus, there is a substantial difference in actor capacity between the Commission of the European Communities and the secretariat of the International Whaling Commission. In general, the stronger the capacity of institutional actors such as conference presidents or committee chairs to undertake independent initiatives or in some other way ‘act’ politically, and the greater the prestige attributed to the organization’s ‘seal of legitimacy’, the more institutional energy will presumably be available for pursuing the ‘common good’.²

Martin List and Volker Rittberger’s analysis of the roles that an international organization may play in different phases in the life of a regime (Chapter IV) clearly suggests the usefulness of the distinction between arena and actor functions. In the initiation stage, an IGO will serve primarily as a *forum* (arena) for problem-solving efforts, and perhaps also provide models for regime design. In the stage of implementing regime rules, an IGO may help in monitoring compliance, assessing actual effects and achievements, and in various ways assist national governments

in fulfilling their commitments. All these functions require that the organization does have some actor capabilities. In the (final) phase of regime evolution, the authors suggest that an organization can play important roles as a ‘center of learning’ (arena), as a broker, and even as initiator of reforms.

The chapter by **Albert Weale** and **Andrea Williams** on the role of institutional arrangements for the development of ‘consensual knowledge’ and the transformation of findings from scientific research into decision premises (Chapter V) strongly suggests that the distinction between organizations-as-actors and organizations-as-arenas should not be seen as implying a ranking in terms of importance. Adopting what they call a ‘modified Hobbesian perspective’, they argue that a regime can provide an institutional setting in which e.g. methods of measurement and schemes for data collection can be intercalibrated across different (national) systems, and be used as a basis for ‘epistemic communities’ to grow and develop links to policy-makers. Existing IGOs generally lack the capacity to *impose* on national systems a particular formula for ensuring consistency and reliability. Yet a regime may fulfil the very important function of providing a forum in which the participants themselves, with or without substantive inputs from the organization itself, can coordinate their work so as to produce synergetic benefits.

The more demanding the decision rule, the more critical becomes *leadership* of some kind. And the less formal authority that is vested in the conference chair and other ‘institutional actors’, the more important becomes *informal sources of power*.

Following Coleman (1973), two ‘faces’ of power may be distinguished. One derives from control over events important to *oneself*, the other from control over events important to *others*. The former provides autonomy – the privilege of being able to pursue one’s own interests without having to worry about what others might do. The latter provides an actor with the means to impose its will on others. The notion of ‘hegemony’ combines the two. The ‘benevolent’ hegemon is an actor sufficiently autonomous and predominant to be able and willing to establish and maintain unilateral solutions to collective problems (e.g. by providing collective goods at its own expense). By contrast, the ‘coercive’ hegemon rules by virtue of its control over events important to others, and it uses this control to induce their (submissive) cooperation. Either way, power can be a means of breaking bargaining deadlocks. Other things being equal, the more ‘unipolar’ the distribution of power, the greater the capacity of the system to act, and the more likely it is the *some* solution (unilateral or ‘joint’) will be developed and also implemented.

Leadership need not, however, be based on power. One kind of leadership that deserves particular attention in international environmental diplomacy is the *instrumental* mode. Here one actor’s guidance is accepted by others either because they become convinced about the substantive merits of the specific ‘diagnosis’ he offers or the ‘cure’ he prescribes, or because of a more or less diffuse faith in his ability

to ‘find the way’. Chapter VI is devoted mainly to the instrumental mode of leadership, more specifically to the principles of designing politically feasible solutions.

Starting from the basic propositions found in ‘conventional’ rational-choice text-books, I raise several critical questions, such as: can we confidently assume that the best solution that is individually accessible to an actor (or accessible to some subgroup that can feasibly be formed and which he can join) constitutes his ‘resistance point’? Does each government care only about the pay-off to its own nation? Do governments pursue ‘national’ interests only? Suggesting that the answer to all these questions is a qualified ‘no’, I conclude that the challenge that the entrepreneurial leader faces in trying to design politically feasible solutions can, in important aspects, be more intriguing than the ‘recipe’ found in conventional text-books would lead us to expect.

Whereas my own analysis in Chapter VI essentially stays within the rational-choice framework while attempting to reformulate some simplistic propositions derived from that paradigm, **Olav Schram Stokke** explores the merits of another approach (or set of approaches) that has attracted considerable attention in recent years (Chapter VII). At least two common features seem to distinguish what he calls the ‘discursive’ approach from the rational-choice paradigm. One is a focus on what might be called the *ideational* basis of decision-making. This implies a concern with aspects such as the existence and evolution of consensual knowledge and shared policy norms. The other is that, although different in some respects, discursive models seem to share certain basic assumptions. Most fundamental is, of course, the assumption that ideas ‘matter’, and evolve through dialogue or other kinds of interaction. Actors are typically seen as, on the one hand, open to reason, and, at the same time, ‘captives’ of the particular historical or intellectual context in which they are situated. Hence, the analysis of joint decision-making must be sensitive to the ideas and institutions which uphold and legitimize current practices, and also their vulnerability to exposition and contestation. Stokke argues that discursive models can be seen, to a large extent, as complementary to those of the rational-choice tradition, since they focus on aspects that rational-choice theorists neglect or consider exogenous to their models. He also concludes that the discursive tradition of research has produced some important insights into processes of international problem-solving that conventional rational-choice analysis could not have come up with. Students of international environmental politics thus need to find some way of building on and integrating insights from both of these approaches.

From Joint Decisions to Domestic Implementation

In studies of international cooperation the ‘implementation game’ is often either neglected or analyzed only in terms of (mechanisms for removing or curbing) incen-

tives to defect. In terms of the latter perspective, the incentives to comply with the terms of an international agreement are, *ceteris paribus*, stronger the greater the reduction in one's own damage costs produced by universal compliance relative to the costs of meeting one's own abatement obligations. Now, an actor that is victim to transfrontier pollution or the depletion of common pool resources will, according to the unitary rational actor model, be tempted to look for some free-rider option. The incentives to choose a free-rider option increases the weaker the link between one's own abatement efforts and the reduction in one's own damage costs, and the smaller the costs (imposed through sanctions) that one expects to incur by defecting. One interesting implication of this line of reasoning is that *advocating* joint action does not necessarily imply readiness to *implement* one's own commitments.

However, implementation is not merely a matter of *compliance* in the narrow sense of game theory analysis; it is a complex political process that deserves attention in its own right. This is particularly so when it comes to environmental problems, since they tend to affect societies more deeply and often also more differentially than what used to be considered quintessential foreign policy issues typically did. In the final chapter, **Kenneth Hanf** and myself examine the logic of the implementation game, and explore the kinds of domestic factors that affect the course of this process and its ultimate effectiveness. The basic argument is that the prospects of having international environmental agreements effectively implemented very much depends on the scope and symmetry of the domestic impact of the policy measures in question, and on the 'institutional capacity' of the government in charge of the process. Particularly when costs are immediate, certain, and concentrated to specific, organized segments of society, while benefits are uncertain, accrue only in a distant future, and are collective or indeterminate in their social distribution, there is a very real risk of what we refer to as 'vertical disintegration of policy', i.e. a state of affairs where the aggregate thrust of 'micro-decisions' fails to 'deliver' what 'macro-doctrines' or policy principles seem to require. Hence, 'non-compliance' in the form of deliberate defection is only one of our concerns; even a government that sincerely wants to fulfil its international commitments may very well find that it cannot effectively control the implementation game.

Notes

- ¹ There are several indications that the shift from the Bush to the Clinton administration will also mark a shift in priorities, this time in favor of environmental values. In neither case can the shift be adequately explained in terms of changes in objective material incentives.
- ² This is not to deny that conference chairs and secretariats may take advantage of their positions to pursue their own private interests as well.

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II. The Interest-Based Explanation of International Environmental Policy

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1. Introduction

Despite growing international environmental interdependence, the international system lacks a central authority to foster environmental protection. As a consequence, countries have adopted different policies to reduce international environmental problems. More specifically, costly regulations are not universally supported. In order to explain the success and failure of international environmental regulation, it is necessary to systematically focus on the factors that shape the environmental foreign policy of sovereign states. Since such an approach is missing from the literature, we develop an interest-based explanation of support for international environmental regulation and postulate which impact it should have on state preferences for international environmental regulation. Specifically, we apply our framework to two prominent cases of negotiations on atmospheric pollution control, namely, efforts to protect the stratospheric ozone layer and the regulation of trans-boundary acidification (“acid rain”) in Europe.

After presenting the interest-based approach to international environmental regulation, we will briefly review the relevant literature on the environmental domains chosen. We shall then apply this concept to two prominent cases of international air pollution regulation and compare our findings. Finally, in the article’s last section, we point to some factors that merit attention in future research.

2. The Interest-Based Explanation

The interest-based explanation of the international politics of environmental management focuses on those domestic factors that shape a country’s position in international environmental negotiations. In other words, the interest-based explanation is a unit-level explanation of international relations.¹ Unit-level explanations refer to elements located at the national or subnational levels, whereas systemic

explanations suggest that differences at the unit level produce less variation in outcomes than one would expect in the absence of systemic constraints. While unit-level explanations emphasize the varying characteristics of countries, systemic theories suggest that countries with different internal characteristics tend to behave in the same way if they are similarly positioned in the international system.

The interest-based perspective on international environmental regulation offers a partial but parsimonious view of how a country's preferences for international regulations are shaped. It focuses on a few unit-level factors which shape a country's behavior toward controlling international ecological problems. These preferences may change during international negotiations if the domestic characteristics of a country change. In addition, the bargaining process itself is a potential source of change. However, including a bargaining theory of international negotiations is beyond the scope of this article. The aim of this article is to present a parsimonious explanation by concentrating on two unit-level factors of major importance, namely, a country's ecological vulnerability towards pollution and the economic costs of pollution abatement.²

In our analysis we assume that each country is a self-interested actor who rationally seeks wealth and power by comparing the costs and benefits of alternative courses of action. To assert that countries pursue their national interest or seek wealth and power does not tell us what their specific preferences might be in a given situation. Thus, it is assumed for the issue-areas of ozone depletion and trans-boundary acidification that states are pursuing two main goals with the help of their environmental foreign policies. First, each country seeks to avoid vulnerability to air pollutants.³ Each state is concerned in the first place with its own territory and pays only lip service to the idea of the "spaceship Earth." In particular, countries pursue policies which minimize adverse environmental effects on their own citizens and ecosystems ("ecological vulnerability"). Second, states are more inclined to participate in environmental protection when the costs of compliance are relatively minor. In addition a country may promote regulations that would benefit it by increasing international demand for its pollution abatement technology and its substitute compounds.

If all states pursue these goals, why do some promote international regulations vigorously while other countries do not? What makes some countries strive for tight international emission controls? Why do other countries try to prevent or slow internationally coordinated action toward environmental protection?

In most cases, environmental policy is a reaction to environmental problems. Without actual or anticipated environmental degradation, there would be no need for environmental protection. Conversely, we hypothesize that the worse the state of the environment, the greater the incentives to reduce the ecological vulnerability of a state. National environmental policies, however, do not depend only on the degree of ecological vulnerability. There are several examples of countries that

have not taken effective measures to address serious environmental problems in their territories. This holds because environmental policies are also shaped by socio-economic and institutional capacities to protect the environment.⁴ We wish to emphasize the role that economic capacity plays in determining the ability of the state to strive for tight emission controls. We furthermore suggest that different degrees of ecological vulnerability and of economic capacity explain much of the cross-national variance found in support for international environmental regulation (see below).

States are not equally affected by atmospheric pollution. A state can be a source of international pollution, its victim, or both. A victim country A, that is, a country that is ecologically vulnerable to emissions emanating from country B, should try to improve the state of its environment by asking country B to reduce its emissions. Therefore, we expect victim countries to favor international environmental protection. If the environment of a country is affected by domestic emissions, it is expected to favor international harmonization of environmental policies in order to avoid disadvantages in international competitiveness. Thus, there are two major reasons for a vulnerable country to push for international regulations. First, a country's unilateral abatement activities may be insufficient to substantively improve the state of its environment; and second, it would like to avoid putting its polluting industries at a comparative disadvantage in international markets. Conversely, if a country is in a position where foreign or domestic emissions do not much degrade its environment, it should be less eager to promote international environmental regulation.

Our understanding of the role of knowledge in environmental policymaking is somewhat different from that of the proponents of the theory of epistemic community.⁵ According to this theory, the role of knowledge-based experts is significant in shaping a country's environmental policy. For example, Peter Haas suggests that those countries where policymakers turn to experts for advice are likely to become "pushers" for stringent international controls:

The pacing of national response [to the ozone threat] can be explained largely in terms of the extent of the epistemic community's influence on various governments and its ability to help them interpret the emerging scientific consensus and articulate appropriate policies.⁶

We do not deny the influence of the knowledge of experts on policy but emphasize the contents of knowledge rather than its mere existence. Since countries are often unequally affected by environmental problems, we expect that epistemic communities in ecologically vulnerable countries will exert stronger effects on governmental elites to seek international regulations as opposed to their impact in less ecologically vulnerable countries.⁷

In addition, a country's capacity to abate pollution influences its propensity to seek international environmental regulation. In general we expect that the greater

the abatement costs of emission reductions, the more reluctant a country should be to support international regulations (other factors being equal). If, on the other hand, international environmental protection is relatively inexpensive, a country should be more inclined to subscribe to international environmental regulations. In particular abatement cost functions are influenced by the state of abatement (or prevention) technology, behavior modification (which can lead to price changes), and other factors. New and cost-reducing abatement technologies may reduce the (actual or anticipated) socioeconomic effort needed to support substantive regulations of the environment.

By combining indicators of a country's ecological vulnerability (low and high) with abatement costs (low and high), countries can be classified into four categories: "pushers," "intermediates," "draggers," and "bystanders" (see Figure 1). It is hypothesized that countries in cell 2 of Figure 1 (i.e., those expected to act as pushers in international negotiations) strive for stringent international regulation, while countries in cell 3 (i.e., draggers) oppose international environmental regulation. The countries falling in cell 4, namely intermediate countries, find themselves in a particularly precarious situation. On the one hand they have ecological incentives to participate in international environmental regulation, while on the other hand they may not be willing to shoulder the substantial costs involved. Finally, countries falling into cell 1 (bystanders) should have little ecological interests in international regulations, but they are likely to take more ambitious positions than draggers because of the low costs associated with their negotiation position.

Besides typifying the anticipated behavior of states, we also suggest an ordinal ordering of intensity of support for substantive (rather than purely declaratory) environmental regulation. We expect that pusher countries take more stringent environmental positions than intermediate countries do, while the latter group is expected to favor environmental protection more often than draggers. The likelihood of bystanders' supporting environmental protection should fall between those for pushers and draggers; however, no direct comparison with the intermediate group seems to be appropriate on theoretical grounds.

The purpose of the remainder of this article is to assess the extent to which state policies toward controlling air pollution conform to the interest-based hypoth-

		Ecological vulnerability	
		Low	High
Abatement cost	Low	1. Bystanders	2. Pushers
	High	3. Draggers	4. Intermediates

Fig. 1. Classification of a country's support for international environmental regulation.

esis outlined above. The empirical analysis of state policies is based on the negotiations leading to the signing of the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer (control of stratospheric ozone-depleting substances) and the 1985 Helsinki Protocol (control of transboundary acidification) which are the first two major multilateral agreements that oblige national governments to reduce harmful air pollutants.

3. Review of the Literature

Before turning to the empirical assessment of the interest-based hypothesis, we briefly summarize the contemporary social science literature on national policies toward the Montreal and the Helsinki Protocols. The negotiations on these international environmental agreements were chosen for several reasons. First, regulations of air pollutants, especially chlorofluorocarbons (CFCs) and sulfur dioxides, cut across many vital industries of advanced industrial countries (utilities, transport, refrigeration, etc.). Therefore, the cases chosen imply that international regulations may involve substantial economic burdens rather than merely declarations of ecological goodwill. Second, the cases chosen are of importance for future regulation of the enhanced greenhouse effect (global warming). In particular CFCs are major greenhouse gases, and the larger complex of acid rain regulations also covers nitrogen oxides, another greenhouse heating gas. From a historical perspective, the regulation of sulfur emissions can be seen as a predecessor of the regulation of nitrogen oxides, and the variance of political and economic systems found across European countries (both Eastern and Western) during most of the 1980s is suggestive of the challenges of regulating the global environment.⁸ Third, the literature and the availability of data on international air pollution regulations seems to be best developed for social science research as compared with other environmental domains. Given the current scientific and public discussions on global warming, we expect this academic and policy emphasis on the regulation of air pollutants to continue.

3.1. *The Montreal Protocol*

Because of the depletion of the stratospheric ozone layer, increased ultraviolet radiation may pose significant threats to human health (especially skin cancer, eye damage, and adverse impact on the immune response system) as well as to aquatic and terrestrial ecosystems. In order to limit these effects, international cooperation was sought to control the emission of substances which were believed to deplete the stratospheric ozone layer. As a first step, the Vienna Convention for the Protection

of the Ozone Layer was signed in 1985. It places emphasis on cooperation in research and exchange of scientific information. Building on the Vienna Convention, the 1987 Montreal Protocol contains specific obligations to reduce the production and consumption of five CFCs by 50 percent by 1999, using 1986 as a base year, and to freeze the production and consumption of three halons at their 1986 levels by 1992. The regulations were tightened in 1990 at London, where states agreed to a total phase-out of fifteen CFCs, three halons, carbon tetrachloride, and methyl chloroform during the next 10 to 15 years. Furthermore, in 1992, it was decided in Copenhagen and, in 1995, in Vienna that restrictions shall be implemented faster than envisioned in London. Given the optimism stemming from the London agreement, Joseph Glas concluded that "through efforts to address the ozone depletion issue, we appear finally to have found a way to behave as a global community and make a commitment to reduce the overall risks to society in the future."⁹ However, it is assumed by the interest-based explanation pursued in this article that national interests shape state policies toward protecting the stratospheric ozone layer. Despite the growing interest of social scientists in the politics of global environmental pollution, relatively little work has been done on explaining the policies undertaken by countries to protect the stratospheric ozone layer.

In general, six factors have been emphasized in the literature as having been conducive to the process of negotiating the Montreal Protocol:

1. the impact of scientific understanding of ozone depletion;
2. the role of the epistemic community;
3. the impact of public pressure on decision-makers;
4. the role of technological developments;
5. the leadership role played by the United States; and
6. the role of international institutions.

The writings of Glas, Morissette, and Benedick emphasize the crucial role which the evolving scientific understanding of the causes, extent, and consequences of ozone depletion has played for the conclusion of the Montreal Protocol.¹⁰ By the mid-1980s, a strong scientific consensus had developed, demonstrating that anthropogenic emissions pose a threat to the stratospheric ozone layer. The knowledge of ozone depletion caused concern among the mass publics and put pressure on decision makers to protect the ozone layer. However, Karen T. Liftin points out that not the provision of information is solely important, but the way it is interpreted to decision makers.¹¹ This is an enhancement of the work of Peter Haas, who focuses on the role of the epistemic community in shaping attitudes of states towards protecting the stratospheric ozone layer.¹² Furthermore, it is assumed that the ability of industry to produce CFC substitutes made it easier for governments to reduce the production and consumption of CFCs. Benedick, the chief US negotiator of the Montreal Protocol, emphasizes the role of political leadership. According to him,

the US government played a crucial role in persuading hesitant governments to agree to international regulations.¹³ Furthermore, Edward Parson emphasizes that international institutions – and the United Nations Environment Programme (UNEP) in particular – were increasing the willingness of countries to agree to CFC controls.¹⁴ While scientific knowledge, expert opinion, public concern, bargaining process, and technological development undoubtedly contributed to the signing of the Montreal Protocol, the analyses do not sufficiently explain why some governments had stronger preferences to regulate ozone-depleting substances than other countries. Whereas Benedick refers to several potential factors, Haas concentrates on a monistic explanation. In explaining why the United States began pushing for stringent international controls on ozone-depleting substances earlier than the European Community (EC), Haas refers to the different strengths of the epistemic community, the tradition of pro-environmental sentiment, and the differences in the relations between the scientific community and the governments on both continents.¹⁵ One would expect that these differences also have an impact on policies in other issue areas. However, this does not seem to be the case. For example, the EC/European Union has been more eager to control the emissions of carbon dioxides than the United States has been. Thus we suggest that, besides the impact of scientific knowledge and epistemic communities, policies are mainly shaped by a country's ecological vulnerability and economic capacity to control environmental degradation.

3.2. The Helsinki Protocol

In order to limit the adverse effects of transboundary acidification of forests, aquatic ecosystems, and human health, European (and North American) governments had created an international environmental regime by the late 1970s. While the 1979 Convention on Long-range Transboundary Air Pollution (LRTAP)¹⁶ has received considerable attention, relatively few social science publications have predominantly focused on the origins and consequences of the 1985 Helsinki Protocol.¹⁷ This is the more surprising since the Helsinki Protocol is the first substantive agreement among a subset of signatories of the LRTAP Convention and mandates signatories to the protocol to reduce sulfur emissions or their transboundary fluxes by at least 30 percent by 1993 (compared to 1980).

In general, three tiers of literature related to negotiations on international regulations of sulfur emissions can be distinguished:

1. historical and legal perspectives;
2. descriptions of emission control policies of specific countries; and
3. policy assessments of support for sulfur regulations.

Only the latter two categories are of particular interest to this article.

The literature on the emission control policies of various countries describes the foundation for country positions on international sulfur regulations. The two volumes edited by Barbara Rhode as well as the studies by Helmut Weidner, by Sonja Boehmer-Christiansen and Jim Skea, and by Gregory Wetstone and Armin Rosencranz summarize and assess the following factors for various countries:

1. institutional setting of air pollution control (e.g., legal regulation and its history, monitoring, and enforcement);
2. damage caused by air pollutants to humans, ecosystems, and materials;
3. technological capacity to reduce the emission of air pollutants;
4. national decision making on emission policies; and
5. the environmental impact of national policies on foreign countries.¹⁸

While these studies contribute country-specific information needed for comparative assessments of air pollution policies, they normally lack a normative, theoretical, or empirical framework.¹⁹

The literature on policy assessments sheds light more narrowly on the factors that explain why some countries support sulfur regulations and why other countries are reluctant to do so. In his article on international policy responses to transboundary air pollution in Europe, Peter Sand stresses the impact that geographical location, the adverse effects of the deposition of air pollutants on lakes and forests, joint research, and related national and international regulations played during the 1980s.²⁰ However, Sand falls short of providing an explanatory theory for the variance found among countries in support of the Helsinki Protocol. Conversely, Rosencranz chose to explain why Poland, the United Kingdom (UK), and the United States have declined to push for stringent sulfur regulations for economic, meteorological, scientific, or political reasons.²¹ Although Marc Levy offers the most detailed account of the reasons why various prominent countries have pursued more or less ambitious regulations, he does not put forward a systematic explanation of state behavior towards international environmental regulation.²²

Since a systematic explanation of state support for international environmental regulation is lacking from existing studies, we propose that a country's interests are defined by differences in ecological vulnerability and economic abatement costs. In the following sections, we will test our propositions by choosing the negotiations that led to the conclusion of the Montreal and Helsinki Protocols as our case studies.

4. Policies Toward Stratospheric Ozone

In the case of stratospheric ozone depletion, we hypothesize that a country's preference for international controls is determined by the vulnerability of its population to increased ultraviolet radiation and the economic cost of reducing CFCs.

UNEP played a major role in making ozone protection a top priority by funding research on the issue and sponsoring international meetings. In 1978 a scientific committee established by UNEP issued an assessment of the scientific evidence of ozone depletion and noted "the consistency in model predictions" but also recognized the continued existence of "large uncertainties in both the predicted ozone depletions and the understanding of their consequences."²³ In the mid-1980s, major difficulties concerning processes and observation of ozone depletions were not yet resolved. For example, it was difficult to quantify future ozone depletion: the estimates varied from 3 to 20 percent. This problem notwithstanding, all models predicted that continued releases of CFCs would damage the ozone layer. The general conclusions drawn by observers were incorporated in a report by UNEP in 1985 which summarized the contemporary understanding of stratospheric ozone depletion in the following way:

Nothing has been discovered to disturb the basic premise, identified some two decades ago, that the ozone layer is likely to be depleted if concentrations of trace gases, particularly chlorine containing substances, continue to increase. . . . Refinement of chemical theory points unwaveringly toward the existence of a problem of ozone layer modification and impacts for man and his environment that are universally bad.²⁴

By the mid-1980s, sufficient consensus among natural scientists existed to start formal negotiations on the ozone regime, but governments could still point to the lack of hard evidence regarding the theory of stratospheric ozone depletion.

Increased ultraviolet radiation is believed to have several adverse effects, but we concentrate on a direct human health effect, skin cancer. During the early 1980s more was known about human health effects than other consequences, and state representatives had been predominantly concerned with skin cancer.²⁵ It was known that ultraviolet light can produce considerable mortality and morbidity through the induction of skin cancer in white populations who live close to the equator and are therefore more exposed to ultraviolet radiation. Dark-skinned populations as well as populations living farther away from the equator were considered less affected by ultraviolet radiation. The threat of the effect of evenly spread global ozone depletion would have amplified the occurrence of skin cancer and exposed larger populations to the conditions found in equatorial regions.²⁶ In order to determine the vulnerability of a country to global ozone depletion, one would ideally combine its latitude and the skin type of its population. Since no data was found for the latter indicator, the ecological vulnerability of states is determined on the basis of

the incidence of skin cancer among their populations in the mid-1970s. No assumption was made regarding the relationship between the local variation in the degree of ozone depletion and the skin cancer incidence because of lack of adequate data during the early 1980s. The analysis that follows assumes that the division of populations into categories of high and low skin cancer incidence as observed in the mid-1970s remained unchanged until the mid-1980s. During the negotiations the incidence of skin cancer was linked to policies toward ozone depletion. A representative of Australia mentioned the high incidence in his country to explain Australia's interest in having the ozone layer protected.²⁷ In the words of a delegate from Malaysia, "Skin cancer doesn't seem to occur in tropical countries, which have been by and large bystanders" in the negotiations.²⁸

Besides ecological vulnerability, the economic costs of reducing harmful emissions is assumed to shape a country's preferences and to affect its environmental foreign policy. Specifically we hypothesize that the higher the consumption of CFCs is per unit of gross national product (GNP), the higher the abatement costs should be and vice versa.

The incidence of skin cancer as well as the "intensity" of CFC consumption – measured as the amount of CFC consumption in relation to GNP (for those states that attended most of the sessions of the working groups on the ozone regime and played visible roles in the negotiations) – are displayed in Table 1.²⁹

On the basis of the data, we hypothesize that the ecological vulnerability of Australia, North America, and Northern Europe had been particularly high, and we expect the countries of these regions to favor strict environmental regulations. If the threshold of three cases of skin cancer per 100 000 inhabitants is employed to classify environmental vulnerability, ozone depletion should not have been regarded as a particularly serious problem in the Federal Republic of Germany (FRG), France, Italy, Japan, and the UK. Using a threshold of six metric tons of CFCs per hundred million US dollars of GNP, the costs of reducing CFCs should have been high in the former Soviet Union, Italy, the UK, France, and Australia. In the 1980s, these states should have had a strong economic interest in *opposing* significant reductions of CFC production and consumption.

Combining the vulnerability dimension and the abatement cost dimension, Figure 2 displays the categorization of individual countries according to the interest-based hypothesis that was presented in Figure 1.

The states in the upper right-hand corner in Figure 2 (pushers), namely, Canada, Denmark, Finland, Norway, Sweden, Switzerland, and the United States, should have had both ecological and economic incentives to support significant emission reductions. Their populations are vulnerable to increased ultraviolet radiation, and emission reductions should not impose a great economic burden on them. Ecological and economic constraints should have made France, Italy, the Soviet Union, and the UK the most visible dragger states in the negotiations. According to our clas-

Table 1. Ecological vulnerability and abatement costs: stratospheric ozone depletion^a

Country	Rate of skin cancer (number of cases per 100 000 inhabitants), mid-1970s	Intensity of CFC consumption in 1986 (net atmospheric increase per GNP 10 ⁻⁸) ^b
Australia	16.30	6.30
Canada	3.20	5.75
Denmark	5.40	5.56
Federal Republic of Germany	2.10	5.86
Finland	3.90	5.88
France	2.50	6.57
Italy	3.00	8.23
Japan	0.30	3.64
Norway	8.30	1.09
Soviet Union	NA	12.50 ^c
Sweden	5.50	3.24
Switzerland	5.20	5.13
United Kingdom	2.60	8.01
United States	7.20 ^b	4.66

^a Only countries which were participating actively in the negotiations are listed. No data were available for the skin cancer incidence in the former Soviet Union, but it was considered to be a country with a low incidence of skin cancer (see Thomas B. Stoel, Jr., Alan S. Miller, and Breck Milroy, *Fluorocarbon Regulation: An International Comparison* [Lexington: D. C. Heath, 1980]).

^b Calculated in metric tons per US dollar GNP. GNP = gross national product.

^c The data used in the calculation is the average of the net material product in 1985 and 1987.

^d White US population only.

Sources: Data on skin cancer incidence are from J. Waterhouse *et al.* (eds.), "Cancer Incidence in Five Continents," in *IARC Scientific Publications* 4 (No. 42) (Lyon: International Agency for Research on Cancer), pp. 730-731. Data on CFC consumption are from World Resources Institute, *World Resources 1990-91* (New York, NY: Oxford University Press, 1990), pp. 348-349. Data on GNP are from World Bank (1991), *World Tables 1991*, Data Disk (Washington, D.C.: World Bank). Data on the net material product in the former Soviet Union is from United Nations, *National Accounts Statistics: Analysis of Main Aggregates, 1988-1989* (New York: United Nations, 1991).

Ecological vulnerability			
		Low	High
Abatement cost	Low	Federal Republic of Germany, Japan	Canada, Denmark, Finland, Norway, Sweden, Switzerland, United States
	High	France, Italy, former Soviet Union, United Kingdom	Australia

Fig. 2. Predicted position of countries: stratospheric ozone depletion.

sification, Australia qualifies as an intermediate country, and the FRG as well as Japan are expected to behave as bystanders.

4.1. *Evaluation of the Interest-Based Hypothesis*

The negotiations on the protection of the stratospheric ozone layer began when an ad hoc working group established by UNEP met for the first time in Stockholm in 1982. It held four sessions before the conclusion of the Vienna Convention on the Protection of the Ozone Layer three years later. Following this agreement, a new working group for the preparation of a protocol on emission reductions met three times in 1986–87 so that the Montreal Protocol could be signed in 1987. In order to assess the actual positions taken by countries during the negotiations, we mainly rely on written documentation. A time series of policy positions of all countries is unfortunately not available from accessible documentation. Country positions ranged from “no reductions” to virtual elimination of commercial use of CFCs.

The Nordic countries, namely, Denmark, Finland, Norway, and Sweden, strove for stringent internationally binding regulations from the very beginning of the negotiation process. Only the Netherlands clearly supported the Nordic initiative at the first session. In addition, Australia, Canada, and Switzerland were believed to be particularly interested in 1982 in bringing about an internationally binding treaty.³⁰ Before 1983 the United States had regarded further scientific evidence as a prerequisite for international regulations because of the socioeconomic consequences of emission controls.³¹ By 1983 US representatives pointed to the potentially serious impact of CFCs on the ozone layer and regarded it as prudent to take specific steps to control CFC emissions. However, while having banned all aerosol uses of CFCs in 1978, the US government considered restrictions put on nonaerosol uses of CFCs as “inappropriate at this point in time.”³² The United States had concluded that it would not profit from being the only country to invoke new stringent domestic standards on the use of CFCs.

In 1984, Canada invited the most active states pushing for international regulations to Toronto to add momentum to the diplomatic process. Seven states besides Canada attended the meeting: Austria, Denmark, Finland, Norway, Sweden, Switzerland, and the United States.³³ While the goal of the “Toronto Group” was to offer an agreement on reducing the use of (aerosol) CFCs in spray cans and to sign the Vienna framework convention, besides the Toronto Group, only the Netherlands was willing to support a control protocol in 1984.³⁴ During the negotiations in 1986–87, the members of the Toronto Group began to demand that virtually all CFC emissions should be stopped. The United States in particular was active in pushing for significant reductions of ozone-depleting emissions. In 1987, it proposed that the production of CFCs and halons first be frozen at the 1986

levels and later eliminated step by step except for uses for which substitutes were not commercially available.³⁵ Furthermore Canada, the Netherlands, and the Nordic countries were also pushing for large reductions in CFC production. The policy of the FRG also had changed by that time. As late as 1984 it had behaved like a dragger state. But the FRG acknowledged in 1987 that sufficient proof of CFC involvement in ozone layer modification had been accumulated to "justify immediate and world-wide action to restrict severely all CFC emissions."³⁶

France, Italy, Japan, and the UK tried most consistently to prevent the adoption of drastic reductions in CFC production and consumption. Since three of these countries belonged to the EC, the EC views reflected their interests. In the beginning these states were reluctant even to discuss a control protocol, since they either did not regard it as necessary³⁷ or thought that any regulation concerning CFCs should be decided on after opening the framework convention for signature.³⁸ A recommendation put forward in 1984 by six countries, including France, the FRG, Italy, and the UK was typical of the dragger states' attitude. It contained two modest measures. First, it recommended that the effects of potentially harmful substances on the ozone layer be investigated within three or five years before any decisions on regulations were to be taken. Second, the recommendation encouraged the establishment of a code of conduct for enterprises producing CFCs.³⁹

The controversy between the actual (versus the predicted) pusher states (Canada, the Nordic countries, and the United States), and some dragger states (the EC and Japan) characterized the negotiations on the Montreal Protocol. In 1985 the EC was only willing to limit the production capacity of CFCs. The proposed ceiling was higher than the then-current production levels within the EC.⁴⁰ However, by 1987, the EC was convinced that more stringent international action was necessary to control emissions. The new policy of the EC included, besides the freeze on the production of CFCs, an automatic reduction in CFC production and imports of 20 percent, based on 1986 levels.⁴¹ In particular, Denmark, the FRG, and the Netherlands were pushing the EC to accept significant reductions in CFC production, while France and the UK still opposed tighter regulations. The Japanese policy also began to change by the end of the decade. In 1987 a representative of Japan considered it "realistic to establish immediate measures such as regulations on CFC-11 and CFC-12 and to consider to control other substances."⁴²

The arguments used by the (former) Soviet Union during the negotiations resembled those of the dragger states, but the overall policy of the Soviet Union was cautious. Although Winfried Lang, who chaired the sessions that prepared the Montreal Protocol, described the Soviet stand in 1986–1987 as "friendly to reductions" ("eine reduktionsfreundliche Haltung"),⁴³ and the press reported in 1987 that the Soviet Union favored big reductions, analysts of the negotiations tend to place the Soviet Union together with the EC and Japan as opponents of international regulations.⁴³

Building on this summary of the negotiation process, we assess the validity of the impact of ecological vulnerability and abatement costs on a country's position in international environmental negotiations. The states in the upper right-hand cell of Figure 2 correspond well with our hypotheses. These states acted as the most consistent pushers in the negotiations. In addition, Austria and the Netherlands (with low CFC production intensities of 0.5 and 1.0 respectively) were supportive of the position of the pushers.⁴⁵

As expected on the basis of ecological and economic constraints, France, Italy, and the UK were visible dragger states in the negotiations. And the behavior of the former Soviet government is not necessarily surprising.

While the policies of the foregoing countries seem to support the interest-based explanation of support for international environmental regulation, the categorization of Australia (intermediate), the FRG (bystander) and the Japan (bystander) are more problematic. Australia (with both a high intensity of CFC consumption and a high skin cancer incidence) was initially uncommitted, but as the negotiations progressed, it became a pusher and began to favor stringer regulations. The FRG should not have had a strong interest either in behaving as a pusher or a dragger. Nevertheless, it first opposed international regulations, though it reduced the use of aerosol CFC in the early 1980s. Furthermore, its policy changed significantly in 1987 when the German representatives sought large international reductions in all CFC emissions and announced that they would aim at ending production and emissions by the end of the century. How can this change in policy be accounted for with the help of the interest-based explanation? Furthermore, we need to explain why Japan was one of the most visible draggers in the negotiation process, though it should not have had any strong interest in opposing international regulations of the consumption of CFC-11 and CFC-12.

4.2. The Impact of Technology on Reducing Abatement Costs

Whereas Australia's position is best explained by a choice between emphasizing ecological vulnerability and abatement cost, the remaining deviant cases can be explained by focusing on the impact of technology on reducing abatement costs.

The change in the policy of Australia seems to be a result of the extremely high skin cancer incidence. Australia is particular vulnerable to ozone depletion. The skin cancer incidence in Australia in the mid-1970s was twice the rate of the second most vulnerable state (Norway; see Table 1). Thus it may not be surprising that Australia – forced between the economic interest in avoiding the costs of reducing CFC consumption and the ecological interest in protecting its citizens – emphasized the latter aspect as the basis of its policy.

Improvements of the state of technology seem to have played a major role in

persuading the FRG to accept deep cuts in the production and consumption of CFCs. It appears that the environmental foreign policy of the FRG toward ozone depletion changed as a result of the success of its industries in substituting chlorofluorocarbons. In general the ability to produce affordable substitutes reduces abatement costs and allows countries to favor more stringent regulations.

The behavior of the FRG can be seen as a mixture of dragging (in the beginning) and pushing (in the end). It seems first to have followed the line of the EC that reflected the views of the main draggers, namely Italy, France and the UK. The policy of the FRG changed when the government asked the chemical industry in 1987 for a near-total elimination of CFC production and emissions by the year 2000. Technological development may have played a role in taking this decision since the government announced that the reduction would begin by concentrating on the aerosol industry. Industry was willing to comply with the plan, since it had already gone a long way toward the elimination of all but essential aerosol uses of CFCs.⁴⁶

The significance of the change in position of the FRG is more evident if compared with the situation in the main dragger states. Before the policies of the EC and Japan began to change, their representatives expressed concern during the negotiations that the US companies with their successful development of substitutes might enjoy a significant competitive advantage if drastic international regulations were adopted. Although the aerosol use of CFCs had declined steadily in the EC as a result of increased substitution by less expensive propellants,⁴⁷ EC representatives complained in 1987 that US companies would benefit from a control protocol with drastic regulations, since they were ahead in the search for substitutes.⁴⁸ In the words of a Japanese representative to the ozone negotiations, it was "very important that contracting parties to the protocol should have common access to technological information on substitute chemicals." He also proposed that "a system of international co-operation should be established with a view to making technological information available to all contracting states, thus avoiding the monopoly of that information by specific countries."⁴⁹

As far as the policy of Japan is concerned, the intensity of the consumption of CFC-11 and CFC-12 may be a misleading indicator in explaining its behavior toward international regulations. It seems that Japan's role as a dragger in the negotiations was a result of its reliance of CFC-113. Japan initially insisted that CFC-113 be excluded from international regulations, because it was an essential solvent in its expanding electronics industry. When a solution was found such that Japan could take its major emission reductions for CFC-11 and CFC-12 rather than CFC-113, the change in policy became possible. Besides, Japan's technology for conserving and recycling CFC-113 was advancing rapidly.⁵⁰

Given the positive covariance between the development of CFC substitutes and the more pro-regulatory preferences of national governments, two causal chains

might be suggested. First, technological advances led to more ambitious preferences for environmental regulation. Second, public policy can force the development of more efficient environmental technologies. In conclusion, as a result of a growing perception of the vulnerability to ozone depletion in combination with advances in developing substitutes for CFCs, all states began to gradually perceive common interests in protecting the stratospheric ozone layer by phasing out harmful chemicals.

5. Policies Toward Acid Rain

As in the case of negotiations on the regulation of CFCs, for the case of European acid rain regulation we hypothesize that increased ecological vulnerability and low abatement costs allow countries to favor strict international environmental regulations as opposed to countries with opposite characteristics.

Due to its suspected strong adverse impacts on the environment, transboundary acid rain in Europe ranked high on government agendas in many European countries. Since the early 1970s the scientific discussion on the linkage of acidification to adverse impacts on lakes, forests, soils, monuments, crops, and human health has led to international research efforts sponsored by the Organization for Economic Cooperation and Development,⁵¹ the Cooperative Program for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP), and research coordinated by the United Nations Economic Commission for Europe (UNECE). One major conclusion of these research efforts was the substantiation of the long-range and transboundary nature of acidification in Europe, which made many countries vulnerable to the emission policies of foreign countries.

Parallel to improved knowledge of the ecological effects of sulfur and nitrogen oxides and volatile organic compounds, international efforts were undertaken to reduce the problem by way of internationally coordinated emission reductions. The LRTAP Convention, a framework convention that mirrors the Vienna Convention on the Protection of the Ozone Layer, had been concluded in 1979 as a result of a Swedish initiative on the occasion of the 1972 United Nations Conference on the Human Environment and proposals by then Soviet Secretary General Brezhnev during the Conference on Security and Cooperation in Europe to hold a series of conferences *inter alia* on the European environment. After coming into force in 1983, the LRTAP Convention had been augmented by (1) the 1984 protocol to the LRTAP Convention on long-term financing of the EMEP; (2) the 1985 Helsinki Protocol regarding a reduction of sulfur emissions or their transboundary fluxes by at least 30 percent; (3) the 1988 Sofia Protocol on the freeze of the emissions of nitrogen oxides; and (4) the 1991 Geneva Protocol on the control of emissions of volatile organic compounds.

The diplomatic process leading to the 1985 Helsinki (or Sulfur) Protocol received much public attention, since this protocol represents the first agreement which may require its signatories to allocate substantial (additional) resources toward air pollution abatement. It basically stipulates that signatories must reduce either their national sulfur emissions or their transboundary fluxes by 30 percent by 1993, using 1980 data as the reference base. The protocol was signed by all of its supporters on 9 July 1985 and entered into force on 9 September 1987. Although the basic provisions may not be considered very demanding from an ecological perspective, a significant subgroup of the signatories of the 1979 LRTAP Convention decided *not* to sign the Helsinki Protocol.

Building on the notion and propositions related to the interest-based approach developed above and applied to the problem of stratospheric ozone depletion, we focus on indicators of ecological vulnerability and abatement costs for the analysis of negotiation positions on transboundary acidification in Europe.⁵² For the positions taken by countries in the negotiations, we rely on expert interviews and written documentation to assess the policy positions of countries.⁵³ Regrettably, a time series of policy positions of all countries is not available. The positions ranged from advocating no emission reductions to 50 percent emission reductions.

The degree of susceptibility to acidic depositions varies from country to country, and we expect that ecologically vulnerable states are more likely to promote international agreements than less vulnerable countries. Since "critical loads" reflect the level of acidification that an ecosystem can sustain without long-term damage, an indicator based on exceeding critical loads ("exceedance") reflects increasing deviations from the long-term sustainability of a country's ecosystems.⁵⁴ For the initial analysis to follow, the maximum exceedance for a country in 1988 was chosen to represent ecological vulnerability.⁵⁵ Countries with a maximum exceedance above 5 were coded as highly ecologically vulnerable, and those with maximum exceedances of 5 or lower were coded as low ecological vulnerability (see Table 2 and Figure 3).

Remedial action is likely to lead to resistance by those groups that have to bear the immediate economic burden, namely, industries burning fossil fuels (such as the utility sector). Since governments have to make judgments about the feasibility of environmental regulations, we expect countries with low abatement costs to favor stringent environmental regulations with a higher probability than countries facing high abatement costs. The yearly abatement costs for a 30 percent reduction of 1980 sulfur emission by the year 2000, a prominent position in the negotiations since the late 1970s, are based on policies that include "fuel substitution, use of low sulfur fuels, fuel desulphurization, combustion modification, . . . flue gas desulphurization . . . , [and] high efficient flue gas cleaning methods."⁵⁶ The cost estimates derived by Markus Amann and Gabor Kornai are based on the assumption of a "competitive market for desulphurization equipment, accessible for all

Table 2. Ecological vulnerability and abatement costs: transboundary acidification in Europe

Country	Maximum exceedance of critical loads (total acidity, 5th percentile) ^a	Annual cost of a 30 percent reduction of SO ₂ from 1980 levels by the year 2000 (percentage of GDP) ^b
Austria	6	0.04
Belgium	6	0.00
Bulgaria	5	1.81
Czechoslovakia	6	0.16
Denmark	6	0.04
Finland	5	0.00
Federal Republic of Germany	6	0.05
France	6	0.00
Germany Democratic Republic	6	0.87
Greece	3	0.60
Hungary	6	0.32
Ireland	5	0.14
Italy	6	0.01
Netherlands	6	0.05
Norway	6	0.12
Poland	6	0.69
Portugal	5	0.22
Romania	6	2.42
Soviet Union	6	0.39
Spain	5	0.13
Sweden	6	0.01
Switzerland	6	0.04
United Kingdom	6	0.04
Yugoslavia	6	4.36
Average	5.7	0.52
Standard deviation	0.7	1.01

^a Exceedances were measured in eq H⁺ ha⁻¹ yr⁻¹ (equivalents of hydrogen per hectare per year). The following recoding rule was employed: < 0 eq H⁺ ha⁻¹ yr⁻¹ = 1; 0–200 eq H⁺ ha⁻¹ yr⁻¹ = 2; 200.1–500 eq H⁺ ha⁻¹ yr⁻¹ = 3; 500.1–1,000 eq H⁺ ha⁻¹ yr⁻¹ = 4; 1,000.1–2,000 eq H⁺ ha⁻¹ yr⁻¹ = 5; and > 2,000 eq H⁺ ha⁻¹ yr⁻¹ = 6. At least one-quarter of a 150 × 150 km Cooperative Program for Monitoring and Evaluation of the Long-range Transmission of Air Pollution in Europe (EMEP) grid must be located inside a country to qualify as the maximum exceedance of a country. The maximum exceedance for total acidity was chosen because it reflects the overall vulnerability of ecosystems to the impact of transboundary acidification.

^b SO₂ = sulfur dioxide; GDP = gross domestic product. Abatement cost data were converted from deutsche marks to US dollars by applying an exchange rate of DM 2.22 per US dollar (the average exchange rate between 1982 and 1990). The cost functions reflect the additional resources needed to reduce sulfur emissions by 30 percent over and above original government emission policies for the years 1980–2000. Economic data for Central and Eastern Europe should be interpreted with caution. Sources: Data for critical load exceedances are from Jean-Paul Hettelingh, Robert F. Downing, and Peter A.M. de Smet, *Mapping Critical Loads for Europe*, Coordination Center for Effects (CCE) technical report No. 1 (Bilthoven, the Netherlands: CCE, National Institute of Public Health and Environmental Protection, 1991), p. 19. GDP data for 1988 are from *The Economist, The Economist Book of Vital World Statistics* (London: Random House, 1990), pp. 32–33, since standard economic sources did not provide adequate data for all economies in transition for the particular period under consideration. Abatement cost data are derived from Markus Amann and Gabor Kornai, “Cost Functions for Controlling SO₂ Emissions in Europe,” working paper series of the International Institute for Applied Systems Analysis, WP-85-065, Laxenburg, Austria, mimeograph, 1987. Exchange rate data are from International Energy Agency/Organization for Economic Cooperation and Development (OECD), *Coal Information 1991* (Paris: OECD), p. 216.

		Ecological vulnerability	
		Low	High
Abatement costs	Low	Finland, Ireland, Portugal, Spain	Austria, Belgium, former Czechoslovakia, Denmark, Federal Republic of Germany, France, Hungary, Italy, Netherlands, Norway, former Soviet Union, Sweden, Switzerland, United Kingdom
	High	Bulgaria, Greece	former German Democratic Republic, Poland, Romania, former Yugoslavia

Fig. 3. Predicted position of countries: transboundary acidification in Europe.

countries throughout Europe,” while the option of an energy conservation strategy has been excluded.⁵⁷ Total annual abatement costs were then reexpressed as a percentage of gross domestic product (GDP). A threshold level of 0.52 percent of GDP/year, the European average abatement costs for a 30 percent reduction in sulfur emissions, was used to distinguish between low and high abatement cost countries (see Table 2 and Figure 3).

Combining indicators of ecological vulnerability and abatement costs, Figure 3 displays the categorization of countries by way of the interest-based hypothesis.

5.1. *Evaluation of the Interest-Based Explanation*

In the case of the Montreal Protocol, the behavior of most countries could be explained by the interest-based approach to international environmental regulation. Does this finding also hold for the case of transboundary acidification in Europe?

Although most of the pusher countries (upper right-hand cell of Figure 3) finally supported strict regulations in the mid-1970s, it was Norway and Sweden that convinced the remaining Nordic countries to promote strict international regulation. Before 1982 the early calls for standstill and rollback clauses were fiercely opposed by the FRG and the UK for reasons of perceived high abatement costs in the late 1970s and distrust in the assessments of cause-effect relationships of transboundary acidification. In addition the UK had already reduced sulfur emissions to a considerable degree in the 1970s before sulfur regulation became an international issue.⁵⁸ As a consequence of the resistance of the FRG and the UK, the 1979 LRTAP Convention did not introduce any costly regulation except for the need to study the problem or, in view of Rosencranz, to provide “the perfect solution to the victim countries’ need for international recognition of the acid rain problem, and the polluting countries’ need to continue to pollute.”⁵⁹

However, the position of the FRG dramatically changed after the release of its first comprehensive forest survey in 1982. This survey demonstrated that large parts of its forests were classified as being damaged. Its position taken at the 1982 Stockholm Conference on Acidification of the Environment presented a clear turnaround. The FRG not only acknowledged the impact of sulphur dioxide and nitrogen oxide on forest decline but also called for intensified efforts at the international level.⁶⁰ Consequently only the UK persisted in actively dragging the negotiations while the FRG joined the Nordic countries and Canada called for the formation of a “30 percent club” of like-minded countries.

Formalized at the 1984 Ottawa International Conference of Ministers on Acid Rain this initiative followed early Norwegian and Sweden demands for a 30 percent reduction of 1980 sulfur emissions.⁶¹ Roughly half of the countries classified as pushers, namely, Austria, Denmark, the FRG, France, the Netherlands, Norway, Sweden, and Switzerland, have belonged to the 30 percent club that convened at the 1984 Ottawa conference. In order to broaden the scope beyond largely wealthy, Nordic and West European countries and Canada, the FRG hosted the 1984 Munich Conference on the Environment. That international conference led to the addition of most of the Central and Eastern European supporters of the Helsinki Protocol.

Despite pressure from the Nordic countries because of the major impact of British emissions on their countries, the UK resisted joining the 30 percent club due both to consideration of the costs and distrust in the scientific findings of the cause-and-effect relationship.⁶² The UK remains the only country classified as a pusher that continues to oppose strict sulfur regulations.⁶³

While the pushers by and large acted in the predicted way, this cannot be said of the druggers. In fact Bulgaria and Greece seem never to have played an active role in the negotiations, and the cost implications are likely to have induced them not to support substantive reductions in sulfur emissions. However, despite the very high abatement costs, Bulgaria accepted the 30 percent reduction goal most likely due to pressure from the former Soviet Union (see below). Unlike their active opposition during the negotiations on the Montreal Protocol, the druggers opted out and refused to take an active role in the negotiations on the Helsinki Protocol.

The intermediate group comprises only East Central European countries, namely, the former German Democratic Republic, Poland, Romania, and the former Yugoslavia. None of these countries can be described as having been active in the negotiations process of the mid-1980s or as having been particularly attentive to environmental issues in the 1980s. In addition, the relatively high abatement costs did not provide incentives to take strict regulatory positions in international negotiations.

The bystanders in our analysis fall into two groups. The first subgroup comprised Finland, which found itself in the fortunate situation: its energy policies

announced in the early 1980s would cause no additional abatement costs. Like many other European countries (especially France), it had responded to the oil price changes in the early 1970s with a shift toward nuclear energy generation. As a consequence, its sulfur dioxide emissions have declined over the 1980s, and it was estimated that a 30 percent reduction in sulfur emissions could be accomplished at no additional cost. The members of the second subgroup, Ireland, Portugal, and Spain, also faced a combination of relatively low abatement costs and low ecological vulnerability. In these comparatively poor member countries of the EC, trans-boundary air pollution issues have not ranked high on the environmental agenda; consequently, these countries have not actively participated in the negotiations on the Helsinki Protocol. In conclusion the group of bystanders largely behaved as predicted, and the internal split can partially be accounted for by differences in intra-group abatement costs.

In many respects, the former Soviet Union played an unusual role in the negotiations on transboundary acidification in Europe. As the initiator of the diplomatic process, it had taken a special interest in the conclusion of international sulfur regulations because of the cooldown of relations among the superpowers in the mid-1980s. As a participant in the negotiations on the Helsinki Protocol pointed out in an interview, the Soviet Union strongly urged the East Central European countries to sign the Sulfur Protocol. Their signatures were of particular importance because of the all-European nature of the environmental problem at hand and the minimum requirement of sixteen signatures needed for the protocol to enter into force. However, Poland and Romania (as well as the former Yugoslavia) were unwilling to commit themselves to ambitious policies. That the Soviet Union used its influence to offer signatories a choice between reducing their emissions *or* their *transboundary* fluxes can be interpreted as a cost-saving measure for a particularly large country. Thus, the position of the former Soviet Union can be explained by the interest-based hypothesis as well as by its desire to improve East-West relations in the late 1970s and early 1980s.

In conclusion, only the group of pushers conclusively acted as predicted: they actively supported the diplomatic process leading to the Helsinki Protocol. Draggers, intermediates, and bystanders (with the exception of Finland) behaved rather passively. However, this behavior is likely to have damped short-term aspirations of the most vigorous pusher countries. In the case of transboundary acidification, the extent of abatement costs seems to have a more substantial effect on state behavior than ecological vulnerability.

We conclude that the hypotheses relating to the interest-based explanation of international environmental regulation hold for the group of pushers, but they do not well explain the differentiation among the remaining three groups.

5.2. *The Impact of Technology on Reducing Abatement Costs*

In the case of stratospheric ozone regulation, we found strong evidence for the proposition that the existence and economic feasibility of substitutes allowed the FRG to favor the reduction of CFCs. This also holds for the negotiations leading to the Helsinki Protocol, since feasible sulfur control technologies were available in 1985.⁶⁴ Moreover the FRG and Sweden were not only interested in reducing their ecological vulnerability to pollution imports but they also represented what Volker Prittzwitz has called “third party interests” (*‘Helferinteressen’*) because of the existence of significant environmental industries in their countries.⁶⁵ In both countries substantial environmental industries for the removal of sulfur emissions have emerged, and they have become major exporters of these technologies on the European market. Furthermore, several experts from Nordic countries concluded that regulating polluting industries has in fact given them an international competitive advantage, because regulation has forced industries to introduce new and more efficient production processes (besides pollution control devices or integrated technologies) even earlier than competitors in other countries.

While availability of indigenously developed abatement technology has served as an incentive for some countries to push for stricter regulation, other countries have been less fortunate. Being largely dependent on imported technology or having to rely on technological cooperation with foreign producers of abatement technology, the former Czechoslovakia, Hungary, Poland, and Spain have lacked strong incentives to become active pusher countries. Abatement efforts are under way via international technology transfer to Spain and successful development of indigenous combustion control technology in Hungary. In addition, the former Czechoslovakia and Hungary reduced their emissions involuntarily in the late 1980s as a consequence of economic recessions. In conclusion, some of the most active pushers also had economic incentives to strive for international environmental agreements since international regulations would benefit their abatement technology providers.

6. Comparing Negotiations on the Montreal and Helsinki Protocols

A comparison of the two international negotiations can be conducted on two levels. First, we will briefly compare the diplomatic process across environmental issue-areas; and second, we will compare the explanatory power of the interest-based approach through various cases.

In both international environmental regimes, the Nordic countries were early pushers for international regulation.⁶⁶ The state of natural science knowledge, in addition to the perceived costs of abatement, did not allow for fast international agreements to reduce pollutants in either case. Over time, maturing scientific research led to an acknowledgment of basic cause-effect relationships and a higher likelihood

of early active dragger countries to be more inclined toward international environmental regulation. Specifically, the changes in the position of the FRG in 1982 on transboundary acidification and in 1987 on stratospheric ozone regulation strengthened the position of active pusher countries and reduced the impact of France, Italy, and the UK. Since the changes in the FRG's position seem in part to be driven by a changing evaluation of natural science findings, we find *partial* support for the suggestion that conclusive and shared natural science evidence is positively related to international environmental regulation. Conversely, for the case of stratospheric ozone depletion and for transboundary acidification in Europe, the absence of an early agreed upon natural science basis for international regulation originally contributed to agreements that did not require active regulation.⁶⁷ As scientific evidence matured, pollution reduction became more attractive to various countries. In addition, advances in abatement technologies also played an important role in both cases by reducing abatement costs.

Turning to the propositions of the interest-based explanation of international environmental regulation, the basic predictions hold reasonably well for the explanation of the process leading to the Montreal Protocol: pushers as well as active draggers fulfill theoretical expectations. In the case of the Helsinki Protocol, most countries classified as pushers undertook diplomatic activities in accordance with their predicted position. Members of the other three groups were largely inactive during the negotiations.

Overall, our theoretical propositions explain much of the positions taken during the negotiations on the Montreal Protocol as well as the Helsinki Protocol. Given the huge disparity in abatement costs, the discussion on the European-wide reduction of acidifying pollutants partially focuses on West-to-East resource transfers in order to permit these countries to lower their impact on the pushers.

7. Concluding Remarks and Suggestions for Future Research

We hypothesized that the interest-based approach provides a parsimonious explanation of support for international environmental regulation. Operationalized as the degree of ecological vulnerability and the costs of abatement, we expected that countries could be typified as pushers, intermediates, draggers, and bystanders in international negotiations. In addition, we found that technological factors may lessen actual or anticipated abatement costs and thereby increase the propensity of a country to support international environmental regulation.

While many of the basic propositions have been supported by the national positions during the negotiations on both the Montreal and the Helsinki Protocols, it remains unclear why we have two different types of draggers and more universal support for international regulation in the former case than in the latter

case. Therefore, we suggest a few additional domestic factors for future research that could increase explanatory power for both negotiations.

Changes in value preferences, domestic interest representation of mass political attitudes, and industry lobbying efforts could each play an important role. As can be shown for the member countries of the EC, value change, that is, the shift from an emphasis on materialist values to postmaterialist values,⁶⁸ is strongly related to environmental concern and environmental action.⁶⁹ In addition, Western government officials stress the role that public attitudes on the environment play in bringing about domestic and international regulation of pollutants. In parallel to the increasing importance of environmental issues to the general public, green or ecological parties have developed in many countries in Western, Central, and Eastern Europe. Furthermore, traditional parties have discovered the importance of the issue in sustaining electoral support. The study by Gudrun Schwarzer on transboundary acidification provides some clues in favor of this argument. Schwarzer's analysis suggests that nearly all countries showing high political pressure ultimately favored stringent regulation of their sulfur emissions.⁷⁰ Only among countries with low political pressure do we find regulatory preferences to covary with in the degree of ecological vulnerability.

In addition to these mass political pressures on national governments, a differentiated industry pressure model could be developed. By explicitly linking abatement costs and international trade in environmental technologies, on the one hand, to the interests of major polluting industries and the abatement technology sector, on the other hand, a differentiated model of industry support for international environmental regulation can be developed.⁷¹

In conclusion, the interest-based approach provides a parsimonious explanation of the positions taken by governments on the protection of the international environment. More detailed modeling of the domestic policy component may enhance our understanding of why countries wish to allocate scarce resources to substantial improvements of the international environment.

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Notes

- ¹ See J. David Singer, "The level-of-analysis problem in international relations," in Klaus Knorr and Sidney Verba (eds.), *The International System: Theoretical Essays* (Princeton, NJ: Princeton University Press, 1961), pp. 77–92.
- ² The term "abatement costs," as used in this article, reflects the resource outlays associated with a governmental position. It does not reflect damage costs. For international comparisons, abatement costs are expressed as a share of gross domestic product (GDP) or gross national product (GNP) so as to reflect a country's "relative effort."
- ³ Robert O. Keohane and Joseph S. Nye, *Power and Interdependence* (New York: Harper Collins, 1989).
- ⁴ Volker von Prittwitz, *Das Katastrophenparadox: Elemente einer Theorie der Umweltpolitik* (The catastrophe paradox: Elements of a theory of environmental policy) (Opladen, Germany: Leske and Budrich, 1990), pp. 103–115.
- ⁵ The term "epistemic community" refers to a knowledge-based, transnational network of specialists whose members share common views about the causes of environmental problems and the policies to control them. See Peter M. Haas, *Saving the Mediterranean: The Politics of International Environmental Cooperation* (New York: Columbia University Press, 1990).
- ⁶ Peter M. Haas, "Banning chlorofluorocarbons: epistemic community efforts to protect stratospheric ozone," in *International Organization* 46 (Winter 1992), pp. 189–224 and p. 215 in particular.
- ⁷ This possibility is also mentioned by the proponents of the theory of epistemic communities. See p. 30 of Peter Haas, "Introduction: epistemic communities and international policy coordination," *International Organization* 46 (Winter 1992), pp. 1–35.
- ⁸ See Detlef F. Sprinz, "Why countries support international environmental agreements: the regulation of acid rain in Europe," Ph.D. diss., Department of Political Science, The University of Michigan, Ann Arbor, 1992.
- ⁹ See pp. 152–154 of Joseph P. Glas, "Protecting the ozone layer: a perspective from industry," in Jesse H. Ausubel and Hedy E. Sladovich (eds.), *Technology and Environment* (Washington, DC: National Academy Press, 1989), pp. 137–155.
- ¹⁰ See *ibid.*; Peter M. Morrisette, "The evolution of policy responses to stratospheric ozone depletion," *Natural Resources Journal* 29 (Summer 1989), pp. 793–820; Richard E. Benedick, "Ozone diplomacy," *Issues in Science and Technology* 6 (Fall 1989), pp. 43–50; Richard E. Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet* (Cambridge, MA: Harvard University Press, 1991).
- ¹¹ See Karen T. Lifton, "Framing science: precautionary discourse and the ozone treaties," *Millennium* 24 (No. 2, 1995), pp. 251–277.
- ¹² Haas, "Banning Chlorofluorocarbons."
- ¹³ See Benedick, "Ozone Diplomacy"; and Benedick, *Ozone Diplomacy; New Directions in Safeguarding the Planet*.
- ¹⁴ Edward A. Parson, "Protecting the ozone layer," in Peter M. Haas, Robert O. Keohane, and Marc A. Levy (eds.), *Institutions for the Earth: Sources of Effective Environmental Protection* (Cambridge MA: MIT Press, 1993), pp. 27–73.
- ¹⁵ Haas, "Banning chlorofluorocarbons."
- ¹⁶ The LRTAP Convention serves as an umbrella convention for the international regime on the regulation of transboundary acidification (acid rain) in the member states of the United Nations Economic Commission for Europe (UNECE). Canada and the United States are members of the UNECE as are *all* European countries.

- ¹⁷ For examples of the literature on the LRTAP, see C. Ian Jackson, "A tenth anniversary review of the ECE convention on long-range transboundary air pollution," *International Environmental Affairs* 2 (Summer 1990), pp. 217–226; Armin Rosencranz, "The ECE convention of 1979 on long-range transboundary air pollution," in *Zeitschrift für Umweltpolitik* 4 (December 1981), pp. 511–520; Volker von Prittitz, *Umweltaussenpolitik: Grenzüberschreitende Luftverschmutzung in Europa* (Foreign environmental policy: transboundary air pollution in Europe) (Frankfurt a.M.: Campus, 1984); and Gregory Wetstone and Armin Rosencranz, *Acid Rain in Europe and North America – National Responses to an International Problem* (Arlington, VA: Environmental Law Bookcrafter, 1983).
- ¹⁸ See Barbara Rhode (ed.), *Air Pollution in Europe*, vol. 1: *Western Europe*; vol. 2: *Socialist Countries* (Vienna: European Coordination Centre for Research and Documentation in the Social Sciences, Vienna Centre, 1988); Helmut Weidner, *Air Pollution Control: Strategies and Policies in the Federal Republic of Germany* (Berlin: Edition Sigma, 1986); Helmut Weidner, *Clean Air Policy in Great Britain: Problem Shifting as Best Practicable Means* (Berlin: Edition Sigma, 1987); Sonja Boehmer-Christiansen and Jim Skea, *Acid Politics: Environmental and Energy Policies in Britain and Germany* (London: Belhaven Press, 1991); and Wetstone and Rosencranz, *Acid Rain in Europe and North America*.
- ¹⁹ The study by Boehmer-Christiansen and Skea, *Acid Politics*, shows an explicit comparative research design, but the number of explanatory factors exceeds by far the number of cases. Therefore, the conclusions are unlikely to be robust, unless different research methods are employed.
- ²⁰ Peter Sand, "Air pollution in Europe: international policy responses," *Environment* 29 (December 1987), pp. 16–20 and 28–29.
- ²¹ Armin Rosencranz, "The acid rain controversy in Europe and North America: a political analysis," in John E. Carroll (ed.), *International Environmental Diplomacy: The Management and Resolution of Transfrontier Environmental Problems* (Cambridge, England: Cambridge University Press, 1988), pp. 173–187.
- ²² Marc A. Levy, "European acid rain: the power of toteboard diplomacy," in Haas, Keohane, and Levy (eds.), *Institutions for the Earth*, pp. 75–132.
- ²³ Thomas B. Stoel, Jr., "Fluorocarbons: mobilizing concern and action," in David A. Kay and Harold K. Jacobson (eds.), *Environmental Protection: The International Dimension* (Totowa, NJ: Allanheld, Osmun, 1983), pp. 45–74. The quotations are drawn from p. 57.
- ²⁴ UNEP, "Assessment of risks to the ozone layer," 1st Meeting of Steering Committee to Plan Workshops on Chlorofluorocarbons, 17–18 September 1985, mimeograph, p. 6.
- ²⁵ We refer to the knowledge available to decision makers in the early 1980s rather than since the late 1980s. Only after the conclusion of the Montreal Protocol it became evident that the thinning of the stratospheric ozone layer disproportionately affects the polar regions.
- ²⁶ Robin R. Jones, "Consequences of human health of stratospheric ozone depletion," in R. Russell Jones and T. Wigley (eds.), *Ozone Depletion: Health and Environmental Consequences* (New York: John Wiley & Sons, 1989), pp. 207–227.
- ²⁷ UNEP, Ad Hoc Working Group of Legal and Technical Experts for the Preparation of a Protocol on Chlorofluorocarbons to the Vienna Convention for the Protection of the Ozone Layer (Vienna Group), "Report of the Ad Hoc Working Group on the Work of Its Second Session," UNEP/WG 167/2, 4 March 1987, p. 7.
- ²⁸ Quoted from Craig R. Whitney, "EC official says Europeans soon can shield ozone layer," *International Herald Tribune*, 6 March 1989, p. 5.
- ²⁹ Skin cancer may also be caused by other factors. However, given the small number of cases, a multiple regression analysis of the various causes of skin cancer appears not to be feasible.
- ³⁰ Harald Heimsoeth, "The protection of the ozone layer," *Environmental Policy and Law* 10 (April 1983), pp. 34–36.
- ³¹ Ibid., p. 35.
- ³² UNEP, Ad Hoc Working Group of Legal and Technical Experts for the Elaboration of a Global Framework Convention for the Protection of the Ozone Layer (hereafter Working Group for Ozone Layer Protection), "Draft Annex Concerning Measures to Control, Limit, and Reduce the Use and

- Emissions of Fully Halogenated Chlorofluorocarbons (CFCs) for the Protection of the Ozone Layer, Submitted by Finland, Norway, and Sweden," UNEP/WG 94/4 Add. 3, 17 October 1983, pp. 1–2.
- ³³ Australia had also been invited, but it did not participate in the conference.
- ³⁴ UNEP, Working Group for Ozone Layer Protection "Article II to the Protocol: Control of Use of CFCs, Proposal by the Expert from the Netherlands," UNEP/WG 110/CRP, 5, 23 October 1984.
- ³⁵ UNEP, Vienna Group, "Report of the Ad Hoc Working Group on the Work of Its Third Session," UNEP/WG 172/2, 8 May 1987, p. 5.
- ³⁶ Ibid., p. 7.
- ³⁷ UNEP, Working Group for Ozone Layer Protection, "Report of the Working Group," UNEP/WG 78/13, 17 June 1983, p. 3.
- ³⁸ UNEP, Working Group for the Ozone Layer Protection, "Draft Annex Concerning Measures to Control, Limit, and Reduce the Use and Emissions of Fully Halogenated Chlorofluorocarbons (CFCs) for the Protection of the Ozone Layer, Submitted by Finland, Norway, and Sweden," UNEP/WG 94/4 Add. 1, 15 September 1983, p. 3.
- ³⁹ UNEP, Working Group for Ozone Layer Protection, "Recommendation of the Ad Hoc Working Group of Legal and Technical Experts for the Elaboration of a Global Framework Convention for the Protection of the Ozone Layer for a Decision to be Taken by the Governing Council of UNEP," UNEP/WG 94/CRP 34, 19 January 1984.
- ⁴⁰ See UNEP, Conference of Plenipotentiaries on the Protection of the Ozone Layer, "Final Report of the Ad Hoc Working Group of Legal and Technical Experts for the Elaboration of a Global Framework Convention for the Protection of the Ozone Layer," UNEP/IG 53/4, Annex II, 28 January 1985, p. 4; and UNEP, Vienna Group, "Draft Report of the Ad Hoc Working Group on the Work of Its First Session," UNEP/WG 151/L. 4, 15 January 1987, pp. 6–7.
- ⁴¹ UNEP/WG.172/2, pp. 5–6.
- ⁴² UNEP/WG.167/2, p. 6.
- ⁴³ Winfried Lang, "Diplomatie zwischen Ökonomie und Ökologie: Das Beispiel des Ozonvertrags von Montreal" (Diplomacy between economics and ecology: the case of the Montreal Protocol), *Europa-Archiv* 43 (25 February 1988), p. 108.
- ⁴⁴ See Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet*, p. 85; and Haas, "Banning chlorofluorocarbons," p. 209.
- ⁴⁵ Unfortunately, no data are available on the rate of skin cancer in the mid-1970s for Austria or for the Netherlands.
- ⁴⁶ Steven Dickman, "West Germany Strives Towards CFC Elimination by 2000," *Nature* 327 (14 May 1987), p. 93. A similar observation has been made by Benedick. In explaining the differences in 1990 within the EC on the policy toward regulation, Benedick remarks that the FRG announced that it will phase out CFCs in 1995 and other ozone-depleting substances before the end of the century. This took place after the federal government of the FRG had concluded that alternatives to the major harmful chemicals were close to commercial feasibility for nearly all applications. See Benedick *Ozone Diplomacy: New Directions in Safeguarding the Planet*, pp. 164–165.
- ⁴⁷ James K. Hammitt et al., *Product Uses and Market Trends of Potential Ozone-Depleting Substances, 1985–2000* (Santa Monica, Calif.: Rand Corporation, 1986), p. 17.
- ⁴⁸ Debora MacKenzie, "Chemical giants battle over ozone holes," *New Scientist* 114 (23 April 1987), p. 22.
- ⁴⁹ UNEP/WG.172/2, p. 6.
- ⁵⁰ See Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet*, pp. 78–79.
- ⁵¹ Organization for Economic Cooperation and Development (OECD), *The OECD Programme on Long Range Transport of Air Pollutants: Measurements and Findings*, 2d ed. (Paris: OECD, 1979).
- ⁵² Geographically small countries or those with extremely small emissions have been excluded from the analysis. Canada, Turkey and the United States were not included in the analysis since they are not (or are insufficiently) covered by EMEP. In addition, EMEP monitors only the European part of the former Soviet Union.
- ⁵³ The interviews of experts were undertaken by Detlef Sprinz as part of a larger research effort on

- the international regulation of transboundary air pollution in Europe. For details, see Sprinz, "Why Countries Support International Environmental Agreements."
- ⁵⁴ Jean-Paul Hettelingh, Robert F. Downing, and Peter A.M. de Smet, *Mapping Critical Loads for Europe*, Coordination Center for Effects (CCE) technical report No. 1 (Bilthoven: CCE, National Institute of Public Health and Environmental Protection, The Netherlands, 1991).
- ⁵⁵ Using 1991 data is only a second-best strategy, since abatement policies during the 1980s have been asymmetric across countries. However, the procedure can be justified on the basis of the failure of previous abatement efforts to lead to a major improvement of the state of the ecosystems. Therefore, the incentive structure for countries to reach additional emission-reduction protocols had not changed. Furthermore, our dichotomous classification is likely to reduce the errors introduced by asymmetric emission policies across nations. In conclusion, the data resemble the basic ecological vulnerability of states in 1985.
- ⁵⁶ Markus Amann and Gabor Kornai, "Cost functions for controlling SO₂ emissions in Europe," Working Paper Series of the International Institute for Applied Systems Analysis, WP-87-065, Laxenburg, Austria, mimeograph, 1987.
- ⁵⁷ Ibid., pp. 2 and 3, respectively.
- ⁵⁸ It must be noted that the UK objected to 1980 as the reference year since it would have easily fulfilled the obligations with a base year chosen from the early 1970s; personal communication.
- ⁵⁹ Rosencranz, "The ECE Convention of 1979 on Long-Range Transboundary Air Pollution," p. 517.
- ⁶⁰ Swedish Ministry of Agriculture, *Proceedings of the 1982 Stockholm Conference on Acidification of the Environment, June 21–30, 1982* (Stockholm: Swedish Ministry of Agriculture, 1982), p. 37.
- ⁶¹ The 30 percent level was chosen for purely political reasons and is not based on (narrow) ecological considerations.
- ⁶² See Prittwitz, *Umweltaussenpolitik – Grenzüberschreitende Luftverschmutzung in Europa*, p. 143; Boehmer-Christiansen and Skea, *Acid Politics*, p. 216.
- ⁶³ Although the British Department of the Environment was willing to sign the Helsinki Protocol, this was overruled by Prime Minister Thatcher. See Boehmer-Christiansen and Skea, *Acid Politics – Environmental and Energy Policies in Britain and Germany*, p. 216.
- ⁶⁴ UNECE, *Air Pollution Across Borders*, Air Pollution Studies, No. 2, (Geneva: UNECE), pp. 129–133.
- ⁶⁵ See Volker Prittwitz, "Several Approaches to the Analysis of International Environmental Policy," Working paper series of the Abteilung Normbildung und Umwelt des Forschungsschwerpunkts Technik-Arbeit-Umwelt, FS II 88-308, Wissenschaftszentrum Berlin, mimeograph, 1988, pp. 8–9; and Prittwitz, *Das Katastrophenparadox*, pp. 115–129.
- ⁶⁶ They were normally supported by Austria, the Netherlands, and Switzerland.
- ⁶⁷ This applies both to the Vienna Convention and the LRTAP Convention.
- ⁶⁸ See Ronald Inglehart, *The Silent Revolution: Changing Values and Political Styles Among Western Publics* (Princeton, NJ: Princeton University Press, 1977); and Ronald Inglehart, *Culture Shift in Advanced Industrial Society* (Princeton, NJ: Princeton University Press, 1990).
- ⁶⁹ See Detlef Sprinz, "Environmental concern and environmental action in Western Europe: concepts, measurements and implications," presented at the 86th annual meeting of the American Political Science Association, 30 August–2 September 1990, San Francisco.
- ⁷⁰ Gudrun Schwarzer, *Weiträumige grenzüberschreitende Luftverschmutzung: Konfliktanalyse eines internationalen Umweltproblems* (Transboundary air pollution: conflict analysis of an international environmental problem), Tübinger Arbeitspapiere zur internationalen Politik und Friedensforschung, No. 15 (Tübingen, Germany: Arbeitsgruppe Friedensforschung, Institut für Politikwissenschaft, Universität Tübingen, 1990).
- ⁷¹ See Sprinz, "Why countries support international environmental agreements," chaps. 5–7.

III. Domestic Politics and European Acid Rain Regulation

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The most portentous development in the fields of comparative politics and international relations in recent years is the dawning recognition among practitioners in each field of the need to take into account entanglements between the two.

Robert D. Putnam

1. Introduction

International environmental regulation can be conceptualized as reactions of national governments to international pollution exchange and domestic political processes. While there has been a proliferation of theories and studies of the impact of pollution on a country's preferences for international environmental regulation (see below), very little is known about the domestic political *processes* which are associated with the regulation of the international environment. The purpose of this article is to contribute to filling this gap in social science knowledge on the protection of the international environment.

If a country's exposure to pollutants of foreign origin is conceptualized as the major *international* source of environmental regulation, theories of interdependence (Keohane and Nye, 1989), the foreign environmental policy approach (Prittowitz, 1990a), and extensions thereof (Sætevik, 1988) can be seen as important components of national preferences for internationally coordinated environmental policies. However, the pollution-based explanations of a country's preferences for international environmental regulation will rarely provide sufficient explanatory power (Sprinz, 1992b). It is therefore suggested that domestic factors are needed to complement a pollution-based explanation. In fact, the contribution by Sprinz and Vaahtoranta (in this volume) suggests that environmental vulnerability and the costs of regulation are two crucial factors which account for national preferences. The purpose of this chapter is to further specify their model and to provide empirical tests of the political processes which mediate between these two factors and governmental accession to international environmental regulation.

In general, the analysis of regional, reciprocal environmental problems with many emitting and recipient countries resembles the problems encountered in the regulation of *global* environmental problems (Mäler, 1990). In order to gain insights for the potential regulation of global climate change, the case of transboundary acidification in Europe has been chosen (see Sprinz and Vaahoranta in this volume). However, in this chapter I extend my research of the case of transboundary air pollution to the domestic aspects of international regulation. The specific international agreement chosen for in-depth research, namely the Helsinki (or Sulfur) Protocol, is of particular interest since it requires signatories to reduce their sulfur emissions by 30% over a given time span (*ibid.*). Since compliant signatory countries will have to commit substantial resources to the abatement of their sulfur emissions, this international agreement represents a case of *substantive* international environmental regulation.

In the following section, I will briefly review the theories which specify the relationship among the domestic factors involved in the analysis (Section 2). After outlining the data sources (Section 3), I will proceed with the empirical analyses of the impact of domestic factors on international environmental regulation. In particular, the analyses will be undertaken with mass public data and expert data (Section 4). In the concluding Section, I will integrate the findings from these analyses (Section 5).

2. Theories of the Domestic Sources of International Environmental Regulation

Roughly 20 years after the publication of *Domestic Sources of Foreign Policy* (Rosenau, 1967), international relations theory has renewed its interests in the non-systemic (or domestic) factors involved in the formulation of foreign policy. As Gourevitch pointed out in reference to neorealist reasoning. “[d]omestic structure of the ‘I.R.’ person is an independent or intervening variable and sometimes an irrelevant one” (Gourevitch, 1978, p. 881). In contrast to Waltz (1979) and despite a different perspective on the discipline of international relations, both Putnam and Gourevitch would certainly agree that

[a]ny policy pursued by the state must be able to elicit the support of at least enough social elements to sustain the state leaders in power (Gourevitch, 1978, p. 903).

For Putnam, international negotiations are a simultaneous two-level game: On the one hand, a governmental representative negotiates with a set of foreign countries (Level I), and, on the other hand, s/he is in a bargaining situation with relevant domestic constituencies (Level II) (Putnam, 1988). This framework of analysis lends itself to deductive and formal analysis, and its focus on the comparative *dynamics*

of a bargaining situation could be easily applied to the analysis of international environmental regulation. Given my interest in *substantive* international environmental agreements, i.e., actual pollution abatement, rather than in negotiation analysis, a static theory may provide better guidance than a theory of international bargaining which is, understandably, more interested in short-term outcomes.

Typological, conceptual, and empirical analyses characterize the new wave of studies on the domestic sources of international regulation. Karns and Mingst have provided an example of the first tradition, namely the *typological approach* (Karns and Mingst, 1991). Their enumeration of contextual and policy process variables spans a wide domain of potential areas of research. Regrettably, the authors do not provide us with an integration of these domestic aspects of international politics.

Within the second category of *conceptual perspectives* on the domestic sources of international politics, Katzenstein takes a more focused approach by concentrating on state-society relations as a determinant of international (economic) policies (Katzenstein, 1989; Katzenstein, 1984a). Like Gourevitch, he focuses on those interests groups which define public preferences (on foreign economic policy) (Katzenstein, 1984c, p. 18). As a consequence, "foreign . . . policy is seen primarily to reflect societal pressures" (*ibid.*, p. 18). However, this (neo-) corporatist view, in its present stage of theorizing, does not lend itself to specific, *a priori* expectations, and, therefore, severely compromises external validity. For example, Katzenstein contends that

[t]he definition of policy objectives is shaped by the ideological outlook and material interests of the ruling coalition. Such coalitions combine elements of the dominant social classes with political power-brokers finding their institutional expression in the party system and in a variety of institutions a step removed from electoral competition – government ministries, industrial associations, and large public or private corporations (Katzenstein 1984b, pp. 306–308).

It is not clear on theoretical grounds which particular institutions are relevant, and how they will influence foreign policy. While political history might suggest interesting hypotheses by way of induction, I prefer an explicit research design which specifies relevant factors and their directional impact in advance. In order to avoid the indeterminacy of Katzenstein's inductive approach, I will sharply limit myself to a small set of actors and specify their expected support for international agreements.

Third, the research strategy preferred by this author is more closely represented by three separate studies. In an *empirical-quantitative analysis* of US domestic regulation of air pollution in the 1970s, Crandall shows theoretically and empirically that members of the US Congress from the Frost Belt had promoted air pollution regulations which will slow down the migration of industry to the Sun Belt (Crandall, 1983, pp. 110–130). Closer to the realm of international politics, Morrow presents a set of hypotheses derived from a sequential bargaining model and tests these hypotheses regarding the impact of (i) macroeconomic factors as well as

(ii) congressional behavior on the concessions made by both sides in international arms control negotiations (Morrow, 1991). Furthermore, Magee *et al.* (1989) have developed a domestic endogenous policy model of support for international trade policies. In all three studies, domestic interests play an important role in explaining aggregate outcomes. Thus, given an appropriate theory of the domestic sources of international environmental regulation, *directional* hypotheses should be tested.

In conclusion, various strands of theorizing emphasize the importance of domestic factors for the explanation of foreign policy. Because I will not engage in negotiation analysis of the international environmental agreements under consideration, I build on more static theories of comparative theory. However, (neo)corporatist theories lack much specificity in outlining expected relationships between explanatory and outcome variables. As a consequence, I will (i) focus on a concise set of actors involved in the regulation of the international environment and (ii) specify their presumed direction of support for international environmental agreements. Furthermore, I will test these propositions in a cross-national analysis. These hypotheses will be largely taken from a wide range of comparative political theories so as to contribute to the exchange of ideas alluded to by Putnam in the beginning of this chapter.

Postmaterialism may serve as a helpful point of departure for the analysis of mass public attitudes on the environment. However, it is not only postmaterialism which leads to (i) a rising awareness of environmental damage among the mass public as well as (ii) growth of environmental movements, but, as Inglehart points out,

[t]he rise of the ecology movement . . . has taken place because the public has become more sensitive to the quality of the environment than it was a generation ago (Inglehart 1990b, pp. 44–45).

Therefore, a combination of perceived damage and postmaterialism should account for a mobilized public and the growth of the *ecology movement*. The 1980s also saw a rise of (European) *green and ecological parties* which is partially due to the rise of postmaterialism (Inglehart, 1990a, p. 325), and they are “a political vehicle for those movement supporters whose grievances have been ignored by the larger established parties” (Müller-Rommel, 1989, p. 17). Moreover,

most of these parties follow an ideology that consists of strong concern for equal rights . . . , *strong ecological* and anti-nuclear power thinking, solidarity with the Third World, demands for unilateral disarmament, and a general left-wing egalitarian disposition. Among others, most New Politics parties stand for . . . protection of the natural environment through the introduction of transnational pollution controls, and more generally an effective environmental policy against an unquestioned commitment to economic growth (Müller-Rommel, 1990, p. 217, emphasis added).

While it should be expected that the strength of green voting behavior will translate into a higher likelihood for the adoption of international environmental regulations, it will not be sufficient to explain green party support solely by way of environmental damage and support for the environmental movement. However,

given the scope of this study, I will limit myself to this restrictive specification and, thereby, reduce the explanatory power for green party support.

In conclusion, the following line of argument is suggested: Damage to the environment as well as the degree of postmaterialism among the mass public should be positively correlated with (i) a public that holds pro-regulatory attitudes, (ii) the strength of support for the environmental movement, and (iii) support for green or ecological parties. These three factors also serve as (conceptual) aggregates on the country level. In turn, they form the *mass political pressure component* which is positively related to support for international environmental regulation (Figure 1).

Economics is fundamentally concerned with scarcity, and the same holds for politics. Indeed, major (but not all) policies depend on (i) *new* resources being acquired or (ii) *reallocation* of resources from previous uses in favor of a new policy domain – such as environmental policies. Given my interest in those international environmental agreements which are supposed to have substantive environmental impacts, I expect that a country's economic and technological resources play an important role. From an economist's point of view, resources should act like a budget constraint in view of the pro-environmental aspirations of a country. Conversely, if we assume that countries only accede to international agreements which they will honor, resource constraints can be represented by an *industry pressure component* of international environmental regulation.

In the domain of environmental regulation, two important types of resources may merit particular consideration. First, countries can be conceptualized as a pool of economic wealth, traditionally represented by the Gross Domestic Product (GDP). Wealthy countries (with a high GDP per capita) will face less of a budget constraint than poorer countries for the accomplishment of a uniform abatement program – other factors being held constant (Jänicke and Mönch, 1988). One important factor to be held constant is the absence of substantial resource transfers among countries. However, wealthy countries have been reluctant to commit themselves to substantive international resource transfer: The discussion about the New International Economic Order (NIEO) in the 1970s, the Rio de Janeiro meeting of the UN Conference on Environment and Development (UNCED) in 1992, and the international bargaining on transboundary air pollution (LRTAP) during the 1990s¹ all point into this direction. Therefore, it seems appropriate to assume that countries are largely dependent on their own resource pool.

Second, wealthy countries may also be more likely to develop the technologies needed to undertake abatement efforts, especially if they have ecological incentives as a result of substantive damages or an ecologically mobilized public (Jänicke, 1990). In the field of environmental regulation, two particular forms of technology seem to be important.² First, so-called end-of-pipe (or add-on) technologies control the release of hazardous emissions while keeping the industrial processes unaltered. Most common filter and scrubber technologies are examples of add-on

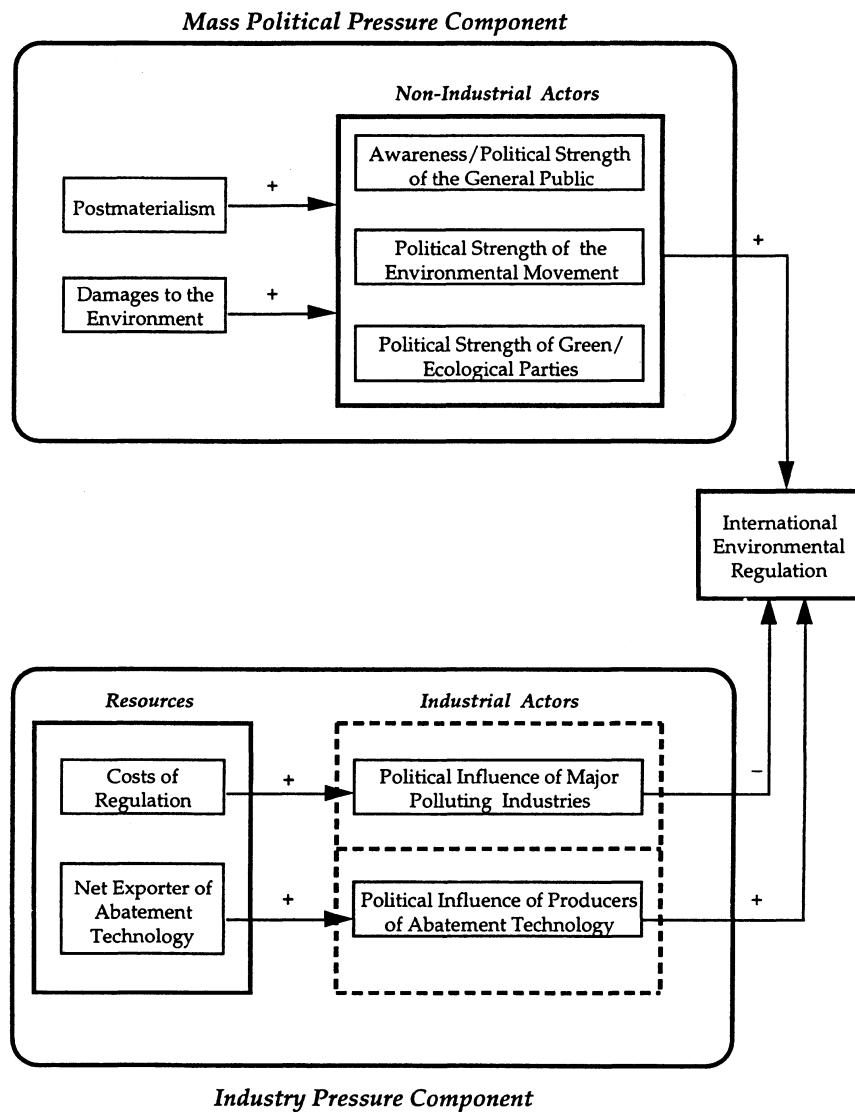


Fig. 1. The domestic sources of international environmental regulation – an overview.

technologies for reducing the emissions of acidifying pollutants. Second, industrial processes can be modified so as to reduce the production of emissions of hazardous substances in the first place. These technologies are called integrated or process technologies (UNECE, 1985, pp. 33–133). Countries which export these products and services undoubtedly have interests in further international environmental regulation apart from their pollution-based incentives.

The introduction of economic and technological factors permits a differentiated assessment of ‘industry.’ On the one hand, *major polluting industries* (smokestack industries such as utilities and smelters) are adversely affected by acid rain regulation, and I expect them to favor less stringent regulations (or, alternatively, substantial subsidies). On the other hand, *technology producers* should have the opposite interest: Environmental regulation creates demand for their products, and they should be supportive of environmental regulation (Praetorius, 1989) (see Figure 1), and their political strength should be positively associated with the volume of net exports of abatement technology.

Overall, the specification of the political pressure component and the industry pressure dimension, as outlined above, provides an extension of Prittowitz’s ‘capacity hypothesis’ (Prittowitz, 1990b, pp. 107–108). Rather than referring simply to the importance of the “state of socioeconomic and political-institutional capacities” to deal with environmental hazards (*ibid.*, p. 108), I suggest a particular set of factors which reflect victim, polluter, and third party (or technology) interests as well as their antecedents on the *domestic* level (see Figure 1). The empirical analyses to follow in Section 4 will test if the mass political pressure component and the industry pressure component are helpful in explaining support for international environmental agreements.

The model presented in Figure 1 can also be interpreted as a more detailed specification of the model suggested by Sprinz and Vaahtoranta (see their article earlier in this volume). Rather than solely relying on *objective* representations of (i) ‘ecological vulnerability’ and (ii) ‘abatement costs’, the analyses in this chapter rely on the regulatory effects of the *perceptions* of the mass publics or specialized elite (experts) regarding (i) damage to the environment and (ii) resources (costs of regulation and net exporter of abatement technology). In addition to substituting human responses for objective data, the model introduced in this chapter also specifies a *political process* which relates ecological and resource constraints to political decisions.³ However, it shall not be overlooked that the basic predictions made by both models are identical: Countries which are (i) ecologically vulnerable and (ii) control substantive resources are likely to seek international environmental agreements in order to enhance the quality of their environment.

In conclusion, the model depicted by Figure 1 suggests that strong political pressure components and a developed technology sector favor international environmental regulations, whereas major polluting industries are likely to oppose

stringent regulations. In particular, relatively poor countries which are also likely to be technology importers will be less likely to support international regulations – provided they intend to honor their international obligations. However, what should be expected if a country has a strong mass political pressure component, but its resource base is weak? If technology and wealth are interpreted as a budget constraint, it is unlikely that political mobilization will be able to overcome the lack of resources. Conversely, what should be expected of a country with resource abundance despite low political pressure? In effect, it would not be surprising if this country did sign this agreement since, at worst, the resource requirements are minimal, and, at best, governments will be able to improve their environmental image. However, some governments may simply ignore such opportunities, since they may not be politically rewarded for their support of internationally coordinated environmental policies.

The analyses which follow (Section 4) concentrate on various aspects of the full model. First, most aspects of the political pressure component will be tested with aggregated data stemming from surveys of the public. Regrettably, for reasons of data availability, these analyses will be restricted to the member countries of the European Community (EC). Second, I will evaluate the comprehensive model with the help of a written questionnaire which I had administered to experts in a group of nine countries. All geographical regions, political systems, levels of wealth, and various levels of support for international environmental regulation will be represented. Before turning to the various analyses of the model in Section 4, I will briefly introduce the data sources below.

3. Data Sources and Manipulation

The data employed for these two analyses comprise

1. Euro-Barometer data (of the Commission of the European Union) for the analysis of mass public attitudes and
2. responses to a written questionnaire by experts in the field of transboundary air pollution (collected by the author).

3.1. Mass Public Attitudes

Twice each year since the mid-1970s, the Commission of the European Union (CEU) sponsors the *Euro-Barometer* survey of the mass public attitudes among its member states. These surveys normally include a core of civic culture items and a much larger section of questions sponsored by a particular Directorate General of the CEU,

the administrative arm of the Commission.⁴ Of particular interest to this study is a specialized Eurobarometer study which concentrates on environmental attitudes of EU citizens, namely Euro-Barometer 25 (Rabier *et al.*, 1988).^{5,6} Since the field-work for Euro-Barometer 25 was undertaken in April 1986 – shortly after the conclusion of the Sulfur Protocol in November 1985 – this dataset seems to be adequate for the purpose of this study. Although only data for the 12 member countries of the EU were available, this still represents an adequate distribution of the supporters and non-supporters of the Helsinki Protocol (see Tables 1 and 2).⁷

The Euro-Barometer survey permits a first test of the mass political pressure component. In particular, the survey includes specific variables representing post-materialism and the salience of damage caused by acid rain.⁸ In addition, variables on environmental movement membership (as a combination of membership in nature protection associations and the ecology movement) were included. Furthermore, a variable representing environment-macroeconomic tradeoffs has been introduced to represent the industry pressure component of environmental regulation. All individual-level, non-missing data have been aggregated to the country level for cross-national analysis. Following the research design outlined in the previous section, I expect the particular hypotheses to hold in a cross-national analysis.

3.2. Expert Data

While the data on mass public attitudes only permit a limited test of the structural model introduced in Section 2, I undertook a series of 129 oral interviews with *experts* in nine countries between November 1990 and October 1991. In addition, 90 participants also volunteered to return a *written questionnaire* which in most cases

Table 1. Support for the Helsinki Protocol: Distribution of All Countries (reference table and aggregate analysis)

	Ratification Status of the Helsinki Protocol (in 1991)	Number of Cases (% of total)
Yes	Austria, Belgium, Bulgaria, (former) CSFR, Denmark, Finland, France, Federal Republic of Germany (West), Hungary, Italy, Netherlands, Norway, (former) Soviet Union, Sweden, Switzerland	N = 15 (63%)
No	(former) German Democratic Republic, Greece, Ireland, Poland, Portugal, Romania, Spain, UK, (former) Yugoslavia	N = 9 (38%)
Total		N = 24 (100%)

Source: UNECE/Executive Body for the Convention on Long-Range Transboundary Air Pollution (1991, p. 16). Due to rounding, the margins do not necessarily sum up to 100%.

Table 2. Support for the Helsinki Protocol: Distribution of Euro-Barometer/EU countries (mass public attitudes)

	Ratification Status of the Helsinki Protocol (in 1991)	Number of Cases (% of total)
Yes	Belgium, Denmark, France, Federal Republic of Germany (West), Italy, Netherlands	N = 6 (55%)
No	Greece, Ireland, Portugal, Spain, UK	N = 5 (45%)
Total		N = 11 (100%)

Source: UNECE/Executive Body for the Convention on Long-Range Transboundary Air Pollution (1991, p. 16).

reached them in advance of the interview. The statistical analysis of the expert data will be based on the completed, written questionnaires. However, references to oral interviews are based on (i) all oral interviews conducted in nine countries, (ii) interviews undertaken with the professional staff at the United Nations Economic Commission for Europe (UNECE) Geneva, and (iii) the staff of the Directorate General for Environment of the Commission of the European Union, Brussels.

Originally, only six countries from Northern, Western, and Southern Europe were included in the study. However, shortly before the anticipated start of the field phase in late 1990, the political changes in the Eastern European countries made the inclusion of three East Central European countries feasible, and participation rates across the former political/economic East-West divide did not pose a problem. In effect, East Central European experts were as eager as their Western and Northern counterparts to participate in the study, potentially because environmental activities – including publication of monitoring results and epidemiological studies – had often been forbidden until the late 1980s. Thus, the subsample of nine countries drawn from the set of 24 countries adequately replicates the distributional pattern of support for international environmental regulation (compare Table 1 with Table 3). In addition, the nine countries included in the expert study also show considerable variation across (i) the victim and polluter dimensions, (ii) type of (former) political system, and (iii) economic wealth and access to abatement technologies. Therefore, patterns found for this subgroup of nine countries should approximate the relationships to be found in the set of all 24 European countries.

In order to test the propositions of the model outlined in Section 2, experts were sought in the above mentioned countries to represent the

- (a) national Ministry of Environment (or the equivalent regulatory body);
- (b) Foreign Office;

Table 3. Support for the Helsinki Protocol: Distribution of Countries Included in the Expert Study

Ratification Status of the Helsinki Protocol (in 1991)		Number of Cases (% of total)
Yes	(former) CSFR, France, Federal Republic of Germany (West), Hungary, Netherlands, Sweden	N = 6 (67%)
No	Poland, Spain, UK	N = 3 (33%)
Total		N = 9 (100%)

Source: UNECE/Executive Body for the Convention on Long-Range Transboundary Air Pollution (1991, p. 16).

- (c) Committee on the Environment (federal legislature, or the respective committee);
- (d) environmental interest groups;
- (e) industry peak associations (or major industrial firms; regardless of type of ownership);
- (f) natural scientists; and (varying by country)
- (g) social scientists, representatives of political parties (if not already included in the above mentioned categories), labor or trade unions, and consulting firms.

The qualifying characteristic for all participants was their *active* involvement in the regulation of sulfur emissions.⁹ Functional representation varied across countries.¹⁰

Most respondents received the written questionnaire two weeks in advance of the oral interview.¹¹ Persons not returning the questionnaire until shortly after the oral interview received two reminder letters with a new questionnaire enclosed with a cover letter. Overall, the response rate, based on those participating in the oral interviews, was 70% (see Table 4).¹² Only Spain posed a problem of a very low response rate. However, it also has to be noted that the issue of the regulation of air pollutants is a *relatively* minor environmental issue in Spain. The same holds for the UK and Hungary.

In the analyses undertaken, all non-missing cases were aggregated without weighting, and at least two non-missing cases had to be present per variable to compute the country average.^{13,14}

Table 4. Response Rates in the Expert Study

Country	No. of Oral Interviews	No. of Returned Written Questionnaires	Response Rate to Written Questionnaire (%)*
(former) CSFR	17	14	82
France	8	6	75
Fed. Rep. of Germany (West)	18	14	78
Hungary	13	7	54
Netherlands	13	12	92
Poland	15	11	73
Spain	12	4	33
Sweden	22	16	73
UK	11	6	55
All countries	129	90	70

Note: In a few cases ($N = 4$), an oral interview was not possible, although the questionnaire was returned. In these cases, the respondent was counted as having participated in the oral interview and as having returned the questionnaire. No more than one interview per country was affected by this procedure.

* The response rate is defined as:

$$\frac{\text{Number of written questionnaires returned}}{\text{Number of oral interviews}} \times 100.$$

4. Empirical Analysis of the Domestic Sources of International Environmental Regulation

In this section, I will first proceed with the analysis of mass public attitudes and then present a more detailed analysis with expert data.¹⁵

4.1. The Analysis of Mass Public Attitudes

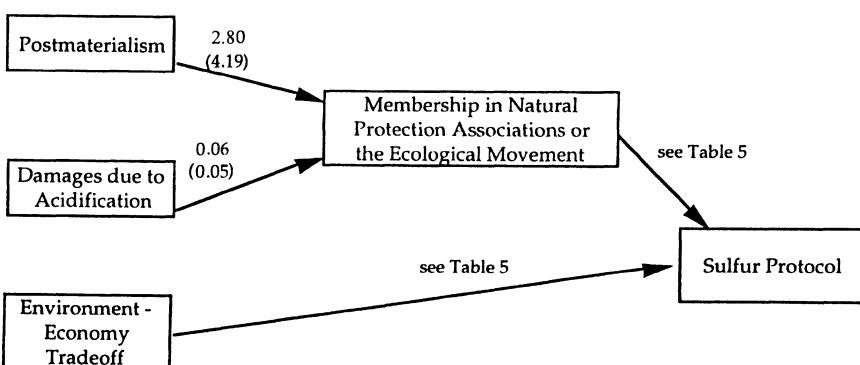
Due to limitations imposed by the data sources, I will largely limit the analysis of mass public attitudes to building blocs of the mass political pressure component (see Figure 1). In addition, this part of the study is restricted to the member countries of the European Union.

Given the theoretical perspective chosen, postmaterialism and damage to the environment will influence environmental movement membership which consists of self-declared membership in environmental protection associations and the environment movement. To represent perceived damages to the environment, a variable capturing the explicit mentioning of acidification as one of three top environmental concerns was chosen. Postmaterialism follows the standard four-item

postmaterialism index developed by Inglehart (1977). In order to provide a partial analysis of the industry pressure dimension of international environmental regulation, I included a trichotomy index of environment-macroeconomic tradeoffs.¹⁶ Fortunately, Euro-Barometer 25 had been conducted shortly after the signing of the Sulfur Protocol. Therefore, support for the Protocol will be regressed on the independent variables as outlined in Figure 2.

As expected from prior research by Ronald Inglehart (see Section 2), postmaterialism and the awareness of environmental threats go hand in hand. In fact, this association leads to strong multicollinearity among the postdictors in the analysis of membership in natural protection associations or the ecological movement.^{17,18} Since the *bivariate* regressions between (i) postmaterialism and (ii) environmental damages, on the one hand, and membership in environmental organizations, on the other hand, show strong explanatory power (results not shown here), I retained both variables in the analysis (see Figure 2).

The second part of the analysis tests the impact of environmental movement support on international environmental regulation. Given my theoretical model, I controlled for the resource dimension by way of an environment-economy tradeoff variable (see Table 5). The analysis shows a theoretically predicted positive relationship between (i) non-industrial group support and international environmental regulation (represented by membership in natural protection associations and the ecological movement), and (ii) a positive association between environmental (over economic) preferences (represented by environment-economy trade-off) with support for international environmental agreements.¹⁹ In substantive terms, a 1% point



Note: N = 11. The score for the membership variable has been rescaled for Denmark and the Netherlands. Entries are unstandardized OLS regression coefficients; standard errors of the coefficients appear in brackets.

Fig. 2. Mass public attitudes and support for the sulphur protocol (Euro-Barometer 25; path analysis).

Table 5. Mass Public Attitudes and Support for International Environmental Regulation

Explanatory Variable	(β_i)	S.E. (β_i)	<i>t</i>
Membership in Natural Protection Associations Ecological Movement	1.60*	1.01	1.57
Environment/Economy Trade-Off	12.07	12.35	0.98
Constant	-32.21	30.89	1.04
-2 × Log Likelihood (-2LL)	7.11		
Significance (-2LL)	0.0286		
Proportional Reduction of Error	0.60		

Note: N = 11. All significance tests for the coefficients are one-tailed tests based on their predicted sign. The score of the membership variable has been rescaled for Denmark and the Netherlands.

* Denotes statistical significance at the 0.10 level.

increase in the membership of ecological and nature protection associations translates into an odds ratio of support for the Sulfur Protocol of 4.95. Furthermore, the economy-ecology tradeoff variable also shows substantive coefficients in the theoretically predicted direction. As a consequence, the measure of the proportional reduction of error attests to some postdictive power of the model.

In conclusion, the analysis of aggregated mass public attitudes of EU member countries shows some support for the propositions laid out in Section 2. In particular, specific damages and postmaterialism led to a mobilized mass public in the form of environmental movements. Although the impact of environmental movement membership is not strongly associated with a country's support for this particular international environmental agreement, knowledge of the model tested above provides guidance as shown by the indicator of the proportional reduction of error. Since only a partial test of the whole theoretical model was possible at this stage, I turn to the analysis of expert interviews which covers nearly all aspects of the theoretical model.

4.2. The Analysis of Expert Perceptions

Surveys of mass public attitudes are rarely geared to answering specific questions about a specific pollutant. Therefore, experts in nine polities, as described in Section 3, were invited to participate in a highly *specialized* survey on the regulation of transboundary air pollution in Europe. In particular, they were asked to respond to questions which capture the research design for this specific analysis (see Figure 1). While this degree of specificity is a particular advantage of expert interviewing, one has to expect to deal with a reasonably small group of persons per country. Furthermore, comparative expert studies rarely include more than a handful of

countries. As a consequence, statistical ‘fit’ in the cross-national analysis will *not* be comparable to so-called ‘large N’ studies. However, the cross-national analysis of nine countries will allow me to assess the hypotheses outlined in Section 2.

The analysis will proceed in three steps. First, I will analyze the effect of environmental damages on the actors included in the mass political pressure component (Section 4.2.1). Second, I will test which impact various types of resources have on the strength of actors belonging to the industry pressure component (Section 4.2.2). Third, I will assess the impact of each of these conceptual aggregates on international environmental regulation (Section 4.2.3).

4.2.1. The Mass Political Pressure Component. The mass political pressure component assumes that environmental damages activate various political actors. In particular, experts were asked about the importance of the acid rain issue in their country as well as a host of *other* major environmental problems (see World Resources Institute, 1990). It is hypothesized that, from the perspective of these experts, environmental problems translate into (i) pro-environmental concerns held by the mass public, as well as into (ii) the political strength of environmental movements, and (iii) green or ecological parties. In short, the pressure of environmental problems activates actors who, in turn, influence governmental elites in their decision-making regarding international environmental agreements. In particular, governments of countries with well-developed pro-environmental constituencies are much more likely to sign international environmental agreements than countries where environmental issues are not yet well institutionalized.

The general public, environmental groups, and green parties are involved in the domestic and international regulation of sulfur emissions. Both the domestic and international policy domains are linked because of the transboundary nature of air pollution and the effects of policies. For this reason, the composite, average score of the impact of these three actors on the (i) domestic and (ii) international regulation of air pollutants were computed and incorporated in the analysis.

In the empirical analysis, two different approaches were taken to assess the impact of environmental problems on the mobilization of the non-industrial interests: First, it was assumed that *ecological vulnerability* to transboundary air pollution would determine the issue-specific strength of the mass public, environmental movements, and green parties. While the directional hypotheses were supported in all cases, the strength of association was generally weak. Alternatively, one could assume that a few environmental problems (including acidification) mobilize pro-environmental interests. In fact, this underlies the concept of ‘induced variables’ (Alwin, 1988): One variable out of a group of *conceptually related* variables triggers variation in the dependent variable. Applied to the regulation of transboundary air pollution, this concept assumes that mobilization for any major environmental issue can be transferred, at least in part, to the regulation of acid depositions. This

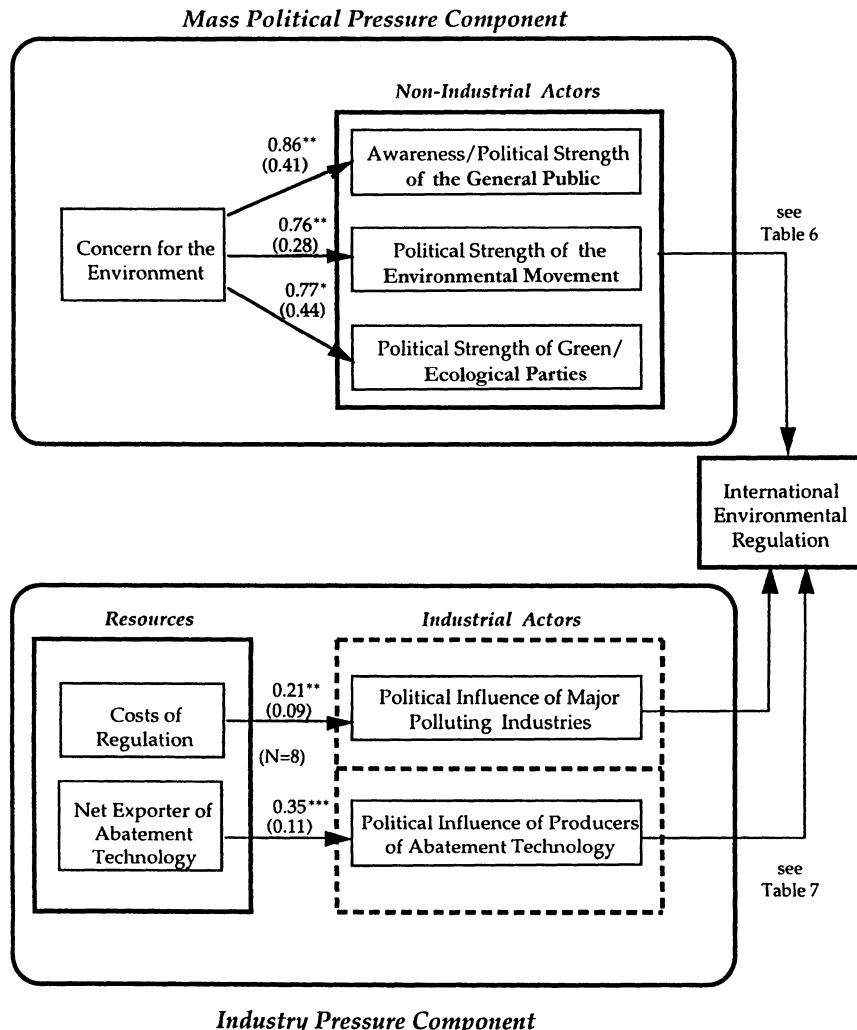
alternative operationalization was considered by including the importance attributed to

- transboundary acidification,
- population growth,
- decline of tropical rainforests,
- side-effects of modern agriculture,
- global climate change,
- biodiversity,
- oceans,
- freshwater, and
- toxic chemicals.

The *maximum score* across these nine items was chosen for the analysis. Thus, the most important environmental component was assumed to trigger the *acid rain-related* strength of mass public, environmental groups, and ecological parties. This specification worked particularly well: Non-industrial actors may ‘acquire’ political strength on a wide range of environmental issues and use this goodwill to lobby for the regulation of a *particular* environmental problem (see Figure 3).

4.2.2. The Industry Pressure Component. While pro-environmental interests of non-industrial groups are likely to be positively associated with support for international environmental regulation, the industry pressure dimension may limit the options which a government has. In particular, I have suggested that perceived high costs of regulation will strengthen the position of major polluters, which, in turn, are normally opposed to national and international environmental regulation, since their profitability is affected. However, the opposite is true for the producers of abatement technology, since environmental regulation creates the demand for their products. For this group, I suggest that a net exporter position will strengthen the regulatory clout of technology producers which, in turn, should support international environmental regulation. In the analysis, support for this differentiated perspective of industry interests was found for the case of the international regulation of sulfur emissions. In particular, the political strength of abatement technology producers is positively related to their export position, while the costs of regulation spur resistance to regulation on the part of major polluting industries. The theoretical expectations are supported by the data (see Figure 3).

4.2.3. The Impact of the Mass Political Pressure Component and the Industry Pressure Component on International Environmental Regulation. In this final step, non-industrial and industrial political strength have been combined in the analysis of support for international environmental regulation. The particular problems



Note: N = 9. Entries are unstandardized OLS regression coefficients; standard errors of the coefficients appear in brackets below the coefficient estimates. All significance tests are one-tailed tests based on their predicted sign.

* denotes statistical significance at the 0.10 level; ** at the 0.05 level; *** at the 0.01 level.

Fig. 3. The analysis of elite perceptions.

encountered in this part of the analysis are related to (i) the small sample size ($N = 9$) in relation to the number of variables to be specified in the mass political pressure and industry pressure components ($k = 5$) and (ii) ‘perfect fit’ of the data (see below). To circumvent the first problem, I suggest using the idea of an ‘induced variable’ for a second time, and I apply it to the three non-industrial interests which shape the mass political pressure component. Substantively, this implies that any of the three groups could have had a decisive impact on government decision-makers. As in the previous application of the induced variable concept, the maximum score across the three groups was chosen to represent the impact of these three groups. Unfortunately, the same idea cannot be applied to the influence which the various industry groups hold, because major polluters are assumed to have *opposite* interests when compared to technology producers. However, taking the difference between the strengths of both groups preserves the directional hypothesis: If the influence of the major polluters is subtracted from the influence exerted by technology producers, I expect this composite variable to be *positively* related to support for international environmental regulations.²⁰ An example might clarify the point: In Sweden, technology producers seem to exert more influence than do major polluters (see Sprinz, 1992b, Ch. 6). Thus, the difference is positive, and I expect Sweden to sign the various international agreements (other factors being equal). To the degree that polluter interests exceed the influence of technology producers, the composite score turns negatively, and countries will be less likely to sign international environmental agreements.

These transformed predictor variables produce a *perfect fit*, because all countries with mobilized pro-environmental interests sign the Protocol. This is also the case for countries with relatively influential technology producers.²¹ Since logistic regression can fit more than one (logistic) curve to these patterns, there will be no unique solution to estimating the coefficients. Instead, the bivariate coefficients have been estimated with ordinary least squares (OLS) and a Weighted Least Squares (WLS) transformation suggested by Hanushek and Jackson (1977, pp. 181–182).

Although OLS is *not* the appropriate technique for the estimation of categorically dependent variables (ibid., pp. 180–186), it provides a first approximation of the strength of a relationship in the absence of a converging maximum likelihood (ML) estimation (see Tables 6 and 7).²²

While the OLS provides a first measure of the relationship among the variables, it cannot capture the functional form of a logistic curve, and OLS cannot appropriately deal with predicted values outside the [0, 1] interval for a (2-level) categorically dependent variable (ibid., p. 185). To check for the plausibility of the substantive conclusions from the OLS results, the models in Tables 6 and 7 were reestimated with a Weighted Least Square (WLS) procedure while forcing predicted values into the [0.05, 0.95] interval (ibid., pp. 181–182). The estimation results (analysis not shown here) do not change the substantive conclusion that

Table 6. Expert Perceptions and Support for International Environmental Agreements: The Influence of Non-Industrial Interests

Explanatory Variable	(β_i)	S.E. (β_i)	<i>t</i>
Maximum Score, Non-Industrial Groups	1.30***	0.32	4.11
Constant	-3.93	1.14	-3.44

Note: N = 8. All significance tests for the coefficients are one-tailed tests based on their predicted sign. Spain was omitted from the analysis. The entries are unstandardized *OLS* regression coefficients and their standard errors. The results should be interpreted with caution!

*** Denotes statistical significance at the 0.01 level.

Table 7. Expert Perceptions and Support for International Environmental Agreements: The Influence of Industrial Interests

Explanatory Variable	(β_i)	S.E. (β_i)	<i>t</i>
Relative Strength of Producers of Abatement Technology over Major Polluters	0.40**	0.14	2.75
Constant	1.18	0.22	5.27

Note: N = 9. All significance tests for the coefficients are one-tailed tests based on their predicted sign. The entries are unstandardized *OLS* regression coefficients and their standard errors. The results should be interpreted with caution!

** Denotes statistical significance at the 0.05 level.

non-industrial and industrial interests are positively related to support for the Sulfur Protocol.

The analysis of the expert perspective on international environmental agreements showed that (i) a mass political pressure component and (ii) an industry pressure component help to explain national positions on international environmental regulation. Although the small sample of countries included in the analysis (i) does not lend itself to strong statistical conclusions, and (ii) interpretation should always proceed with caution about the assumptions explicitly made, the major propositions should hold for all 24 countries.

5. Conclusions

In this article, I have developed a general model of the domestic sources of international environmental regulation. In particular, I hypothesized that ecological damage – in combination with the rise of postmaterialism – mobilize (i) the mass public, (ii) environmental organizations, and (iii) green or ecological parties to demand international environmental agreements. This mass political pressure component has been juxtaposed with an industry pressure component. Particular emphasis

has been placed on the influence of wealth and technology. It was also hypothesized that the growing influence of technology providers will be positively associated with support for international environmental regulation, whereas major polluters are likely to hold opposite positions.

In the empirical analysis, data on mass public attitudes and expert perceptions were employed for the various components of this general model. In most cases, support was found for the major hypotheses. Furthermore, the small ('most different cases') sample design provided particular challenges for the estimation with maximum likelihood. While theoretical propositions should always be tested for their external validity, it seems that the combination of mass political pressures and industrial interests provides adequate guidance for the study of international environmental regulation.

From a theoretical perspective, I have specified (in terms of *political* actors) how a combination of ecological pressures and economic factors (Jänicke and Mönch, 1988) account for support of international environmental regulation, and I tested a more elaborate version of the 'capacity hypothesis' (Prittwitz, 1990b). Given the results of the various analyses presented above, I conclude that the ability of a country to further environmental quality in a world of transboundary pollution is well served by a mobilized citizenry in combination with economic and technological factors, and both are needed to turn the protection of the international environment into reality.

Acknowledgements

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Appendix 1: Question Wording of Mass Public Attitude Data

Euro-Barometer 25

Source: Rabier *et al.* (1988).

Note: All cases with missing data codes were omitted by variable (except if explicitly mentioned). All data were recoded so as to follow the directional hypotheses as described in Section 3. Missing data codes are not included in this listing.

Postmaterialism: Variable 310 (composite 4-item index; see Inglehart, 1977).

Damages Due to Acidification: Variable 172

"When we talk about possible damage to the environment, what do you think of above all? Would you please choose from this list the three things that come immediately to mind? . . . Acid rain which attacks woods and forests.

0. not mentioned;
1. mentioned."

Environment-Economy Tradeoff: Variable 218

"I would like to give you some opinions which are often expressed about the problems of the environment. Which of these opinions are you most in agreement with?

1. Development of the economy should take priority over questions of the environment.
2. Sometimes it is necessary to make a judgment between economic development and protection of the environment.
3. Protecting the environment and preserving natural resources are necessary conditions to assure economic development."

Membership in Natural Protection Associations or the Ecology Movement: Variables 276 and 277.

"There are a number of groups and movements seeking support of the public. For each of the following movements, can you tell me... whether you are a member, or might join, or would certainly not join?

var 276: . . . The Nature Protection Associations

var 277: . . . The Ecology Movement

1. is a member;
2. might join;
3. would not join."

Coding:

Both variables were cross-tabulated (incl. missing data), and all persons who are at least a *member* of one of these two movements were included in the computation of membership for the combined movements.

Appendix 2: Questions from the Expert Interviews

Source: Sprinz (1992a)

Note: All cases with missing data codes were omitted by variable (except if explicitly mentioned). All data were recoded so as to follow the directional hypotheses as described in Section 3. Missing data codes are not included in this listing.

Concern for the Environment: Variables 14, variables 164 through 171

var 14 "In your view, how prominent has the acid rain problem been in the 1980s relative to other environmental problems *in your country*?

1. much more
2. more
3. roughly equal
4. less
5. not at all."

"Which environmental problems *other* than acid rain are of great concern to your country?

var 164 Population Growth
 var 165 Decline of Tropical Rainforests
 var 166 Side-effects of Modern Agriculture
 var 167 Global Climate Change
 var 168 Biodiversity (incl. protection of flora and fauna)
 var 169 Ocean and Coastal Pollution
 var 170 Freshwater Pollution
 var 171 Toxic Chemicals

1. very high
2. high
3. medium
4. low
5. very low."

Coding:

All scores for non-missing cases (by variable) were aggregated separately and by country; the maximum score across all variables (by country) was used in the analysis.

Strength of General Public, Environmental Movement, and Green/Ecological Parties: Variables 111 through 113, variables 127 through 129

"How do you assess the *strength of various groups* or organizations in the domestic political decision-making process on national and international acid rain regulation? Please use a scale ranging from '1' ('very strong') to '5' ('very low') for the domestic and the international process. If an item seems to be inappropriate in your country, please enter '9'.

Domestic Regulation

var 111 Green or Ecology Party
 var 112 Concern of the Mass Public
 var 113 Environmental Groups

International Regulation

var 127 Green or Ecology Party
 var 128 Concern of the Mass Public
 var 129 Environmental Groups

1. very strong
2. strong
3. medium
4. weak
5. very weak."

Coding:

The scores of the domestic and international regulation were combined for each of the three groups.

Costs of Regulation: Variable 37, variable 38

"Within the framework of the *United Nations Economic Commission Europe* (UNECE), several pieces of international regulation have been concluded. Some countries and the European Communities joined these agreements and have begun to implement them, while other countries have abstained from parts of UNECE-sponsored international regulation.

Please compare the standards called for by the international agreements listed below with the respective regulatory standards in your country *before* the conclusion of the UNECE-sponsored international treaties. Were the costs associated with international regulation higher than the costs associated with the domestic standards *at that point in time?* For the temporal domains, please find the year(s) mentioned in brackets with each legal instrument.

var 37 Sulfur Oxide Protocol (1985, provision: reduction of sulfur emissions or their fluxes by 30% until 1993 compared to 1980; so-called '30% Club')

var 38 Nitrogen Oxide Protocol (1988d, provision: standstill agreement on nitrogen emissions or their fluxes by the end of 1994 compared to 1987)

1. much higher
2. higher
3. roughly equal
4. lower
5. much lower."

Net Exporter of Abatement Technology: Variable 151

"Is your country a net exporter or a net importer of acid rain control technologies?

1. major exporter
2. minor exporter
3. exports match imports
4. minor importer
5. major importer."

Influence of Major Polluting Industries and of Producers of Abatement Technology: Variables 152 and 153

"How strong would you rate the influence which various industries (private or public) have on acid rain regulation in your country?

var 152 major polluting industries

var 153 producers of end-of-pipe technologies

1. very high
2. high
3. medium
4. low
5. very low."

Notes

¹ Personal observation at meeting of the Executive Board Air of the LRTAP Convention in November 1990 and November 1991. Interviews with government delegates point to a tendency among Nordic governments, foremost Sweden, to undertake limited international resource transfers. However, major European countries, such as the FRG (before or after its enlargement of jurisdiction), are unwilling to engage in international resource transfers beyond demonstration projects or monitoring equipment. Although it would be actually more cost-effective for a *pool* of Western European countries to 'bribe' some Eastern European countries to undertake emission reductions

- for the benefit of *Western* (and Eastern) European countries, I could find no evidence of substantial international resource transfers.
- ² I am indebted to Andrzej Jagussiewicz for a discussion on this issue.
- ³ The model introduced by Sprinz and Vaahtoranta (see their chapter earlier in this volume) and the model presented here have different strengths. From the perspective of research strategy, the classification offered by Sprinz and Vaahtoranta is most useful for the comparison of a *larger* set of cases of environmental regulation and for the purpose of case selection. This reduced set of cases may then be analyzed in more detail with the model suggested in this chapter.
- ⁴ I am indebted to Ronald Inglehart for this information.
- ⁵ The data utilized in this study were made available by the Inter-University Consortium for Political and Social Research. The data for Euro-Barometer 25 ('Holiday Travel and Environmental Problems, April 1986') were originally collected by Jean-René Rabier, Helene Riffault, and Ronald Inglehart. Neither the collectors of the original data nor the Consortium bears any responsibility for the analyses or interpretations presented here.
- ⁶ The Department of Political Science of The University of Michigan, Ann Arbor, and Ricardo Rodriguez were very helpful in accessing the data and in providing generous computational support.
- ⁷ Luxembourg was omitted from the analyses due to its minor importance.
- ⁸ The particular phrasing of the questions and the recoding procedures appear in Appendix 1.
- ⁹ Without the generous help of many persons and institutes, I would not have been able to execute interviews in such a diverse set of countries or institutions. I am especially grateful to Christer Ågren, Joseph Alcamo, Leen Hordijk, the International Institute for Applied Systems Analysis (Laxenburg) and their Regional Air Pollution Project in particular, Endre Kovács, Marc Levy, Vladimir Novotny, the Swedish Institute (Stockholm), Peter Sand, Peter H. Stief-Tauch, Lopez de Uralde, and Pierre Woltner for their kind assistance.
- ¹⁰ The question wording pertaining to the relevant variables is reprinted in Appendix 2.
- ¹¹ Peter Sand and Christer Ågren provided valuable assistance in improving question wording.
- ¹² Roughly 20–30 persons per country were originally invited to participate in the study. However, due to the technical and highly specialized nature of the questionnaire (Sprinz, 1992a), only the persons counted in Table 4 participated in the study. While the particular response bias is not known, I suspect, based on oral and written communication, that persons who are less dedicated to the particular issue of the regulation of sulfur emissions will have disproportionately declined to participate. In conclusion, I assume that most of the active participants in the expert interviews constitute a representative sample of the *core* specialists in their respective countries. Biases towards inclusion in the sample are unknown beyond (i) knowledge of English (or, in a few cases, German) and (ii) familiarity with the subject matter.
- ¹³ Any proper weighting procedure has to rely on *a priori* knowledge of the distribution of a particular characteristic in the population. However, the 'true' distribution of all potential participants across functional groups (see above) is unknown. Furthermore, the 'true' distribution of functional groups is likely to vary across countries with natural scientists being particularly prominent in East Central Europe and Parliamentarians being particularly well-informed in Northern Europe. For the purpose of the cross-national analysis presented in Section 4.2, I decided to use *unweighted* national aggregates for the computation of the average score of each variable.
- ¹⁴ The coding rule of two non-missing cases balances the requirement of (i) de-emphasizing extreme scores with (ii) reducing the maximum sample size of nine countries for the cross-national analysis. A requirement of three or more non-missing data per country would have led to the exclusion of the Spanish case in many instances. However, since Spain replicates the pollution situation of the UK for sulfur emissions to a considerable degree (and no other 'substitute' is available in the remaining sample), the case selection would have become less balanced on theoretical grounds.
- ¹⁵ The data for all analyses to follow are reported in Sprinz (1992b, Appendix 1).
- ¹⁶ See Appendix 1.
- ¹⁷ Membership in the ecological movements and nature protection associations in Denmark and the Netherlands are three to four times higher than in the other EU countries. The reasons for this response pattern are unknown. To avoid undue impact of the scores for these two countries on

- the estimations in the cross-national analysis, I have rescaled these two scores by multiplying the raw scores by 0.40. This procedure clearly preserves the cross-national rank-order.
- ¹⁸ Multicollinearity will not influence the coefficient estimates, but it will inflate the variances of the estimates. As a consequence, the significance tests of the coefficients are substantially affected (Hanushek and Jackson 1977, pp. 86–93).
- ¹⁹ To simplify the analysis, I assumed uncorrelated errors among the dependent variables in all analyses of this chapter.
- ²⁰ Participants in my expert interviews confirmed that end-of-pipe technologies have been widely used in Germany and Sweden as a consequence of domestic air pollution regulations. As a result, these countries have gained substantial experience with these technologies, and, as other countries have been adopting more stringent environmental regulations, Sweden and the FRG have turned into major exporters of abatement technologies. In turn, government officials conceded that this had a beneficial effect on their country's willingness to sign international agreements despite opposition from major polluting industries.
- ²¹ The estimation problems also effect major subcomponents, and they are *not* generated by the induced variable procedure.
- ²² In Table 6, Spain was omitted from the analysis due to extreme values of regression diagnostics (Cook's D).

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IV. The Role of Intergovernmental Organizations in the Formation and Evolution of International Environmental Regimes

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1. Introduction

Most of what is known today as ‘international environmental policy’ does not date back much further than the late 1960s and early 1970s. Therefore, the United Nations Conference on the Human Environment held at Stockholm in June 1972 may serve as a good starting point for discussing the relationship between intergovernmental organizations (IGOs) and international environmental regimes. The Stockholm Conference was probably the major event for raising the environmental consciousness of international decision makers, and in the Declaration resulting from this conference the delegates of 113 states agreed that

States shall ensure that international organizations play a co-ordinated, efficient and dynamic role for the protection and improvement of the environment. (Principle 25)

This was preceded by an emphasis on “co-operation through multilateral or bilateral arrangements or other appropriate means” which were regarded as “essential to effectively control, prevent, reduce and eliminate adverse environmental effects” (*ibid.*, Principle 24).¹ In this chapter we shall elaborate what role IGOs may play and have played in the formation and the further development of normative frameworks of international cooperation, or, as they have come to be called, of international regimes.

2. Basic Concepts in the Study of International Regimes

The study of international regimes has been one of the major foci of international relations research during the past two decades. Interest in norm-guided international cooperation was a rather logical consequence of the preceding ‘discovery’ of the phenomenon of international interdependence. Theorists of interdependence

had come to question the underlying assumptions of the standard approach or paradigm in international relations of the post-World War II era, i.e. Realism, in several ways. In particular they had questioned the adequacy of conceiving international politics as being merely power-driven, especially if power was narrowly conceived of as military power. A second point made by interdependence theorists was to stress the importance of what realists regarded as 'low politics' and the need to break down generalizations about international politics in general into observations of how international politics is actually carried out in various policy fields or issue areas. Both the role of power and the extent of 'anarchy', the standard attribute ascribed to the international system by realists, had to be assessed on a policy or even issue area-specific basis.

Given the emphasis on interdependence and low politics issues of anti-realist criticism it was no coincidence that the concept of an 'international regime' was introduced for the first time by a scholar, John G. Ruggie (1975), in the context of discussing international responses to technology. Although his seminal article anticipated many of the concepts central to regime analysis and although Keohane and Nye (1977) made reference to international regimes in their joint foundation of interdependence theory, international regimes only really emerged as research focus in the early 1980s. This was mainly due to a conference and the resulting volume edited by Stephen Krasner (1983) in which the standard definition of the term was given. Interestingly enough, the subject of international regimes also formed the focus for scholars of both the interdependence and the (neo)realist tradition. The former in fact came to accept, at least for the sake of argument, one of realism's assumptions which they formerly had attacked, the rational actor model of state behaviour. They did so in order to show that norm-guided cooperation was possible even under conditions which realists typically assume to be fundamental to international relations.

Thus the background conditions for the phenomenon of norm-guided international cooperation referred to by the term 'international regime' are twofold. On the one hand, there is interdependence, particularly but by no means exclusively in low politics issue areas. On the other hand, there is a system of states pursuing their interests in the absence of formal hierarchy, i.e. under anarchy in the minimum sense of that term. More specifically, and following Krasner's original conceptualization, one can understand international regimes as *international social institutions* having both normative components (principles, norms, and rules) and a behavioral component of decision-making procedures. In addition, these institutions are created, or have come about, with reference to a particular issue area of international politics. Beginning with the latter point, one can see how the emphasis of interdependence theory on how international politics actually proceeds in particular policy areas has led to a sort of decomposition of general international politics into various policy areas and hence to the recognition of issue area specific frameworks of coopera-

tion. An issue area is a *concrete* field of activity ‘about’ which a regime may exist. Its limits are drawn, in the first place, by the perceptions of the actors involved and by the analyst in the second place. In delimiting the issue area, reference can be made to both geographical and figurative ‘boundaries’. Protecting the marine environment of the *Baltic Sea* is an example of the former, *protecting the marine environment* (instead of, e.g., managing the fishstocks) of the Baltic exemplifies the latter. The issue area is part of the larger, theoretically defined ‘policy area’ which, in the case already mentioned, might be termed ‘international (marine) environmental protection’. Interdependence theorists would claim, rightfully we think, that the conditions of international politics in the policy area of international environmental protection differ from those in the policy area of, e.g., security policy while regime formation is possible in issue areas belonging to either policy area.

Continuing our task of defining basic concepts of regime analysis, we may say that the prescriptions and proscriptions of an international regime may be contained in multi- or bilateral treaties (resulting in formal regimes) or they may be norms and rules not laid down formally (informal regimes). Whichever is the case, in order for the analyst to be able to identify an international regime it is essential that the behavioral prescriptions are *actually implemented* by norm- and rule-guided behaviour. Unless we are able to demonstrate this implementation, norms and rules remain ink on paper (in the case of a formal regime) and we cannot really speak of an existing international regime.

Norm- and rule-guided behaviour is thus the minimum requirement for a regime to exist. In this sense, the norms and rules must be (formally, as one might put it) effective. This is to be distinguished from another aspect which might be called substantive effectiveness, or, to avoid confusion, goal-attainment: the extent to which goals of international cooperation, set out e.g. in the principles of a regime, are actually achieved through the implementing behaviour of states. This is an empirical question, and therefore an open question as well, even if (formal) effectiveness of norms and rules is made a definitional requirement of regimes.

Norm- and rule-guided behaviour under a regime can occur in the absence of any international organization. Coordinated state behaviour may be sufficient for implementation. Probably more often, however, some kind of intergovernmental organization is either created or used. IGOs set up within the framework of a regime may be called *internal* IGOs and may be distinguished from IGOs whose existence precedes any particular regime. The latter type of IGOs is called external (relative to a given regime). The distinction between regimes and IGOs should be clear. While both may be seen as international social institutions in the broader sense, it is only IGOs which may be said to possess legal personality or an organizational will and to whom, consequently, actions may be attributed. In contradistinction, regimes do not act but exist to the extent that their prescriptions are implemented by states acting within the normative framework of the respective regime.

Our last remarks concerned the conceptual relationship between regimes and IGOs. In the rest of this chapter, we shall address the empirical relationship between the two. However, there is one last conceptual distinction to be introduced. It concerns the three phases in the 'life of a regime'. There is, first, the phase of initiating or 'launching' a regime. This may be called the phase of regime *initiation*. Once a regime has been conceived, i.e. once its principles, norms and at least some rules have been agreed upon, *implementation* is required – according to our definition given above – for the regime to really come into existence.² This, then, is the second phase of 'doing what the norms and rules of the regime say'. Taken together, we shall refer to the two first phases of regime initiation and implementation as regime *formation*. Third and finally, particularly in the field of international environmental protection, many regimes do not come as 'ready-mades' but rather tend to develop (or be developed) in order to gradually improve goal attainment, i.e. to achieve ever better results of environmental protection and improvement. This may be called regime *evolution* and constitutes the third phase in the life of a regime. Of course, any normative development occurring through regime evolution will again have to be implemented. To that extent phase two and three run parallel rather than consecutive. Regime evolution thus refers to the development of an existing international regime. In contradistinction, the process of establishing a new regime is, as noted above, referred to as regime formation. Finally, by what might be called regime involution, there is also the possibility that a regime may decay.

We shall next look at the possible roles for IGOs in the three phases specified. In doing so, we do not claim to give a complete overview of existing studies. Rather, we start from our own experience gathered in a research project on international regimes in East-West relations. This project (first results have been published in Rittberger, 1990) includes three case studies on international environmental regimes: marine environmental protection in the Baltic (List, 1990), the North Sea (List, 1991) and long-range transboundary air pollution in Europe (Schwarzer, 1990). In addition, we draw on other studies, indicated below, that make contributions to the subject.

3. IGOs and Regime Initiation

Since, by definition, there is no internal IGO in an issue area yet to be regulated by a regime, the role of IGOs in regime formation is always an *external* one. Preexisting external IGOs with a more general scope of activity may influence the initiation of a regime in an issue area where hitherto none existed in basically two ways. They may do so, first, by *providing a forum* in which to discuss the issue at hand, thus raising the consciousness for certain environmental problems and

articulating regime demand. The second role for IGOs in regime initiation lies in *providing models*, both regulative and institutional, for the regime (and its decision-making procedures) to be created. To give some examples: By convening the 1972 *Stockholm Conference*, the United Nations (UN) provided for a sort of 'meta-forum' for the entire policy area of international environmental protection. They have tried to do so again by convening the *UN Conference on Environment and Development* (UNCED) held in Rio de Janeiro in June 1992 which was one of the biggest conference in human history so far with regard to the number of participating countries.

A similar role on a regional level may be attributed to the United Nations Economic Commission for Europe (ECE) which constituted the forum for negotiating the 1979 Geneva Convention on Long-Range Transboundary Air Pollution (LRTAP).

Finally, on a very specific level, the Marine Environment Protection Committee (MEPC) of the *International Maritime Organization* (IMO) provided a forum for the first joint action of the Baltic Sea states to further their interest, particularly in having the Baltic Sea declared a special area according to the so-called MARPOL agreement on marine pollution by ships. The Baltic Sea states acted as a group in this forum before they launched their own regime to protect the marine environment of the Baltic. The normative nucleus of this regime is the 1974 *Helsinki Convention*, for long the only convention to encompass all potential sources of marine pollution. After the change in political systems among its Eastern members, now including the independent Baltic republics, the convention has been revised in April 1992 to formally include the *precautionary principle* as well as the *best available technology standards*.

Examples of model diffusion³ can be found in the case of IMO's MARPOL agreement just referred to as well as in the case of the London Dumping Convention of 1972, some regulations of which were integrated into the annexes of the Helsinki Convention. Meanwhile, this integration has been replaced by simple reference to the original conventions since the latter have been ratified by all Baltic Sea states.

The Baltic environmental protection regime, in turn, has served as a model for the Regional Seas Programme conducted under the auspices of the United Nations Environmental Programme (see Gebremedhin, 1989).

UNEP's *Regional Seas Programme* is probably the major example for both ways in which an IGO may further the initiation of international environmental regimes. UNEP provided both a forum and deliberately channelled information about existing regulatory and organizational models, and it may virtually be seen as the birthplace of the by now eight regional environmental 'Action Plans'.

4. IGOs and Regime Implementation

Moving from regime initiation to implementation, we come not only to a large, but in a way decisive, aspect of international regime formation. As stressed above, one cannot speak of a regime in the absence of any form of implementation. While implementation is thus very important, the role of IGOs in this respect seems rather limited. This is due to the fact that implementation, given the absence of a world state, is primarily something states and their respective nationals have to carry out themselves.⁴ To elaborate, let us take a look at Table 1.

What emerges is a multilevel set of normative and factual activities with an element of control built into it. Rare are the cases in which IGOs themselves implement regime norms and rules internationally instead of having states do the job. International inspection of atomic energy plants by staff members of the International Atomic Energy Agency (IAEA) is probably the closest one can get to this model of IGOs (as corporate actors) actually implementing international norms, and even this is closely related to the two main functions of IGOs in implementing international environmental regimes: *controlling the implementation by states* and *assessing its effects*. IGOs may fulfil these rules both externally, lending some of their capacity to regimes of which they are *not* (an essential) part, or internally, by being especially created under a certain regime and for the purpose of its implementation.

Having IGOs control state behaviour is ultimately an ingenious way of having states control themselves. This is better than no control at all, but it certainly raises suspicions. According to an old wisdom, no one should be the judge in his/her own affairs. It may thus be wise to complement this intergovernmental control with some sort of transnational control through international non-governmental organizations (INGOs). Greenpeace is the one INGO that immediately comes to

Table 1. Levels of implementation of international regimes

International normative level:

principles, norms, rules, decision-making procedures around which actors' expectations converge and which may be improved through the process of regime evolution

Implementation:

International factual level:

IGO and/or state participation in collective monitoring and supervision activities

National normative level:

transformation (by the state) into national legal obligations

National factual level:

- (a) de facto implementation by state activity (e.g. construction of wastewater treatment plants)
- (b) de facto implementation by private actors (e.g. buying catalysts for cars)
- (c) state supervision and stimulation of (b), e.g. via prosecution of environmental crimes or tax incentives.

mind when one thinks about transnational implementation control in international environmental policy, but there are many more and less known INGOs of concerned and/or affected citizens watching carefully whether states comply with their international obligations. In the North Sea case, for instance, these groups not only have formed national alliances but a transnational network encompassing the respective national groups of all coastal states.

Nevertheless, indirect self-control by states via IGOs is important, too, and certainly is preferable to no control at all. It creates, at a minimum, a sort of restricted, intergovernmental public to which each state has to justify what it is doing (or not doing) to protect the environment. In particular, this may lead to a reversal of the burden of proof that will fall upon druggers in environmental matters, one of the most important mechanisms in environmental policy quite in general. Druggers have to justify why they think they can comply with established norms and standards by doing less than other countries. To give an example, again from the policy area of marine environmental protection, there is what is called the 'prior justification procedure' applied by the Oslo Commission in supervising dumping and incineration at sea as part of the North Sea environmental regime. National licensing of these activities, presently continued only by Britain, is under the scrutiny of all member states to the OSCOM and depends on their consent.

The general mechanism of reporting obligations, upon demand by an international body or on a regular basis, is the most common instrument for IGO control of member states' activities in the policy area of environmental protection. Such obligations exist, e.g., for the signatories of the sulfur dioxide protocol within the framework of the European LRTAP-regime as well as for the members of the Helsinki Commission in the Baltic marine environmental protection regime with respect to several 'recommendations', i.e. legally non-binding rules.

Since, again, there is some distrust in the reliability of data provided by individual states, parallels have been drawn to the problem of verification in the policy field of arms control. Indeed, not only are the tasks to be performed of somewhat similar complexity, but even the technology involved, such as remote sensing equipments, airborne or even satellite-based, may be similar. Operating such technical means of implementation control might be a possible future role for IGOs, along with the establishment of inspection teams and 'green helmets' for dispatch in cases of environmental emergencies.

Up until now, actual fact-finding missions of IGOs or on-site inspection by their agents are rare. The case of IAEA controls has already been mentioned. As another example of factual international control, one might refer to joint airborne surveillance schemes such as have been established under the North Sea protection regime among the signatories of the Bonn agreement on the prevention of oil pollution. However, this is rather a kind of internationally coordinated activity of the states involved than a case of control by an IGO.

The second role of IGOs in implementing regimes that was referred to above lies in the field of evaluation. This concerns the assessment of outcomes, i.e. of the impact norm and rule compliance has on the environment. Organizing environmental monitoring schemes (as opposed to surveillance that seeks to detect potential perpetrators) that feed into regular environmental assessments is indeed one of the main activities within many environmental regimes. It is often organized by corresponding bodies (variously called ‘Commission’, ‘Task Force’ or the like) specifically created by and for the respective regime – in other words, by what we have called above internal IGOs. Thus, the HELCOM organizes the Baltic Monitoring Programme (BMP) that feeds into the Periodic Assessment of the state of that sea, while a special North Sea Task Force has been established for the same purpose within the North Sea protection regime. Finally, under the LRTAP regime, the European Monitoring and Evaluation Programme (EMEP) is organized with the support of UNECE.

Most of these monitoring activities require previous harmonization and standardization of measurement procedures,⁵ and the organization of ‘intercalibration’ workshops or working groups is yet another task carried out by the small internal IGOs of various environmental regimes.

Finally, in all of these technical monitoring activities there is a lot of exchange of information among the specific IGOs of various regimes as well as between them and IGOs that serve a more general purpose such as WHO, IMO, IAEA or WMO, e.g. by mutually granting observer status to each others staff. This reflects the interconnectedness of environmental issues that are rarely limited to one environmental medium. For example, most marine pollution, in fact is due to land-based activity and reaches the sea via rivers – and the atmosphere. If one were to draw the matrix of interconnection via observers between various IGOs, a rather tight network would emerge, especially since the number of ‘jet-set’ experts is often rather restricted and hence personal cumulation of membership is quite high. The Joint Group of Experts on Scientific Aspects of Marine Pollution, GESAMP for short, sponsored by eight IGOs (besides the UN itself these are IMO, UNESCO, WHO, WMO, FAO, IAEA, and UNEP) may serve as an example.⁶

We have so far stressed supervision and monitoring/assessment as the major functions of IGOs in implementing international environmental regimes. However, this should not lead one to neglect yet another important role which IGOs may play in implementing environmental regimes, although it is a role that is ‘context dependent’. IGOs may play an important ‘enabling role’ with regard to countries not (yet) disposing of the relevant technical, administrative and financial capacities. This enabling role of IGOs will be particularly important in the political context of North-South relations – but also, after the change in politico-economic systems in Eastern Europe and the ensuing revelation of the sad state of both the environment and the capacities for environmental policy in these countries – in East-West

relations. IGOs can, via transfer of financial resources, know-how and environmental technology, increase the opportunity for LDCs to participate in international environmental regimes. This has happened on a limited basis in the Mediterranean case, where advanced equipment like gas chromatographs were made available to southern rim states via UNEP, as well as under the Baltic regime where Third World observers have been invited to marine pollution combating exercises. Finally, the 1990 London revisions of the Montreal Protocol make the ozone layer regime the first global environmental regime to provide for a fund for financial North-South assistance (revised Article 10).

Convincing LDC elites that environmental protection is not the latest 'neo-imperialistic' device to block their national development efforts was in fact partly a result of their gradual involvement in environmental IGO activities, the spreading of IGO action centres (such as the installation of UNEP headquarters in Nairobi) and the IGO-assisted building up of local expertise in LDCs.⁷ It may turn out to be more difficult to convince Northern elites that, at least in cases of global ecological interdependence, improvement of Southern capacities for environmental protection is in the not so long-term interest of the North as well.

As the preparation and the outcome of UNCED have shown, token or symbolic concessions by the North to the South will not suffice to secure the wholehearted participation of developing countries in global environmental regimes. Why should relatively poor countries lower their climate-endangering emissions while the rich USA, supposedly because of the lack of scientific evidence, are unwilling to do the same? Participation by Southern countries, however, is essential wherever global environmental interdependence prevails. This is certainly the case in matters of ozone layer depletion and climate change. The fact that Northern countries are the major source of the anthropogenic pollution load on nature must somehow be reflected, so Southern countries rightfully claim, in the financial burden to be carried in pollution control. When the final resistance by Northern countries such as the USA has been overcome by a reinterpretation of their own long-term interest, the enabling role of IGOs in environmental matters will have to be enlarged considerably. International environmental funds will have to be administered. As again the preparatory discussions of UNCED have shown, it is not only the 'if' of such funds but also the 'by whom' of their administration that is contentious. Shall they be operated by existing international financial IGOs such as the World Bank or by environmental IGOs?

If one speculates only a little further, one might see the North-South conflict in global environmental matters as a potential case for the application of the 'bubble' approach to the distribution of pollution licences. The whole earth, in this view, constitutes one big bubble with limited absorption capacity for anthropogenic pollution. If some, especially Southern, countries will in the course of their – legitimate – socio-economic development increase their emissions, others, especially the North,

will have to reduce their emissions correspondingly in order not to break the upper total limit. Increased efficiency, e.g. in energy consumption, is thus vital. At the same time, a certain amount of money spent by countries that already rank high on environmental technology and efficiency may have a much larger marginal utility, i.e. decrease the pollution load by a greater amount, if spent in low technology/low efficiency countries. This kind of reasoning has already led to financial West-East transfers among the Baltic Sea states, notably by the Scandinavian states most affected by East European emissions,⁸ and the same logic holds for global issues. It is hard to see how the necessary global cooperation could come about in the absence of IGO-supported negotiations and ensuing regime formation, including IGO-administered financial assistance in regime implementation.

5. IGOs and Regime Evolution

The step from implementation to regime evolution is, analytically, a small one, though practically it may prove difficult to take. If part of the role of IGOs in regime implementation is the assessment of results of past activity, it is only natural that they should also be the instigators of new and sharpened rules, stricter standards and improved procedures. They are the very centre of what may be called international (or intergovernmental) ecological learning by providing sets of data that allow an assessment of the state of the environment and of the substantial effectiveness of measures already taken. Moreover, this assessment should be as unbiased as it can be. There is, however, always a tendency for national environmental expertise to be ‘biased’ in favour of the respective national point of view.

This national point of view need not be the government’s view only. It may also reflect the ‘philosophy’ of a national scientific and/or administrative community, such as preferring Environmental Quality Objectives to unified emission standards –as in the notorious quarrel between the British and the continentals in both long-range air pollution and North Sea protection matters. On the other hand, governmental influence on national experts does exist as well, and it ranges from the subtle to the rather crude.⁹

Joint assessments by internationally staffed expert bodies, while not necessarily completely unbiased (remember Gourlay’s criticism of GESAMP for its ‘exertocracy’), at least tend to give a broader and hence more realistic base for environmental decision making. The spread of scientific bodies such as the North Sea Task Force or the Intergovernmental Panel on Climate Change is a testimony of the importance of internationally agreed upon ‘definitions of the situation’, of consensual knowledge, as a basis for improved international regulation.

Learning from the assessment of past activities means drawing adequate

conclusions for guiding future action. Putting forward new proposals for future activities, for new rules and procedures is therefore a major role to be played by IGOs in the evolution of regimes. But again, the power of IGOs in these matters is mainly the power of persuasion, hardly of coercion, since IGOs always remain dependent on their member states taken together (not necessarily on each of them individually), most bluntly for financial reasons, but also because regulatory evolution requires individual state's consent.¹⁰ IGOs may, however, become the place where strategies of persuasion are applied by some states towards other. Battles of (pseudo) scientific justifications of claims and counterclaims may result, as has been the case in both the North Sea regime and the emerging regime for the protection of the world climate. It is up to IGO officials to play the role of *intergovernmental mediators* in the interest of the environment. Bargaining skills as well as personal traits may become important in this respect.

6. Criticism, Conditions and Contradictions of IGO Roles

We have so far spelled out in some detail the role that IGOs, those internal to the respective issue area/regime and those external to them, may play in the initiation, implementation and evolution of international environmental regimes. In doing so, we have taken a rather benign view of both international regimes and the impact of IGOs on them. Both points might be challenged.

Criticism of environmental regime formation might regard it as a case of symbolic politics. In this view, no regime might sometimes be better than a regime which only creates the illusion that 'something is really done' while in reality not much changes.¹¹ To this we have a twofold reply. On the one hand, we have stressed before that implementation is a minimum requirement if one wants to speak of an existing regime. On the other hand, we have admitted that substantive effectiveness or goal attainment is an empirical, open question. While the critical position implies that 'nothing happens politically' if nothing happens ecologically, i.e. that lacking goal attainment remains without political consequences, we see the process of regime evolution as the very mechanism by which remedies to substantive ineffectiveness of regimes may be found. This, of course, is not an automatic process, but the likelihood of it occurring is increased by existing regime structures. Regimes and their internal IGOs provide mechanisms for sharpening rules and standards, an organizational impetus as well as a point of access for transnational pressure towards that direction. We would thus counter the 'symbolic politics' argument by referring to the real possibility of regime evolution.

As for the criticism raised against IGOs as such, there is surely some point where the creation of new IGOs or the enlargement of existing ones has dimin-

ishing returns.¹² However, it does not appear to us that this point has already been reached in international environmental matters. In addition, while closely coupled systems of interdependence may, as argued by Gallarotti (1991), be a condition particularly adverse to the effectiveness of IGOs, it is the very complexity of global ecological interdependence that renders cooperation on an equal scale indispensable. Reliance on market forces, which surely does have its merits, becomes illusory to the extent that it is seen as excluding any other form of regulation – a point valid not only for international environmental policy.

A second point worth further consideration is precisely the *conditions* under which IGOs may successfully play the roles we have identified. Competence of IGOs, both legal as well as intellectual, is an important point here. Both, however, depend on sufficient support of IGOs by member states, especially the major contributors. As long as states are unwilling to renounce any part of what they regard as their sacred sovereignty, it is hypocritical if they in turn criticize IGOs for their lack of effectiveness. The same goes for the lack of financial support. Finally, however, it is also IGOs themselves who, as creatures of the interstate world, must be open for inputs from the transnational world of non-state actors. Otherwise, even well-funded IGOs run the risk of establishing merely a government sponsored expertocracy. And, what is more, since implementation of environmental policy necessarily is restricted neither to IGO activity nor to state action alone but ultimately involves private actors, sometimes virtually every citizen, public support is one of the major resources of national and international environmental policy.

This is probably also the point where the two major *contradictions* involved in the role specification of IGOs in international environmental regime formation and evolution can be found. They concern the seeming contradiction between openness to transnational public interest groups and guarding the image of 'neutral expertise' and the related contradiction between a promotional attitude in environmental issues and the mediating role between pushers and draggers.

The first contradiction, however, is probably more apparent than real, and it is, at least in part, based on an outdated understanding of the role of scientific advice. Scientific understanding of ecological and technical facts is certainly necessary for sound environmental politics. The major questions in international environmental politics, however, cannot be reduced to scientific disputes and hence cannot be solved by 'scientific methods'. IGOs in the policy area of international environmental protection, just as national environmental policy makers, must therefore learn to deal with social conflicts, introducing scientific knowledge to the extent necessary and available without, however, falling into the illusion that political disputes and social conflicts can be dissolved into scientific questions.

The second contradiction is equally difficult to handle. IGOs should be able to mediate between draggers and pushers. However, 'neutrality' in this sense must

not compromise the underlying goal of environmental protection. Creating regimes that start with less strict demands while at the same time providing mechanisms for a gradual evolution into strict international regulations may be one way out.

7. Conclusion

To conclude, we return to the idea that both regimes and IGOs can be regarded as two forms of international institutionalization. With regard to the relation between these two forms a more abstract sociological statement can be made.¹³ It should be clear from what has been said that IGOs and regimes are not identical, and that the latter do not presuppose the former. One can think of regimes that can do without any formal organization. Mutually restrained or merely coordinated action by states may suffice. However, setting up a formal intergovernmental organization has three important consequences.

First, creating an internal IGO indicates a more permanent commitment of member states and provides for continuity of the regime over time. Since expected future interaction ('the shadow of the future') is one of the conditions favouring rule compliance and hence regime formation in our sense, a formal organization may simply be seen as a device for member states to demonstrate that their commitment is 'serious'.

Second, both internal and external IGOs provide for a multilateralization in various respects: gathering and providing for information, exercising compliance control, furthering regime evolution. The advantage of multilateralization is to avoid nationalistic biases and, in particular in North-South contexts, to render opportunities of participation more equal.

Finally, by creating positions for their own staff, IGOs provide for the material basis for persons who are committed to pursuing the 'inter-governmental' goals that lie at the origin of the respective regime.¹⁴ The importance of this (remunerated) commitment should be clear. Only in this way can the international public interest gain a sufficiently independent standing to make itself listened to by national decision-makers and bureaucracies. It has already been stressed that the inter- or transnational public interest in a healthy environment requires transnational activity as well. IGOs and INGOs must therefore form alliances, and the fact that the former are a focal point of reference for the latter is not the least role they can play in the formation and evolution of international environmental regimes.

Notes

- ¹ The text of the Stockholm Declaration of June 16, 1972, can be found in *International Legal Materials* 11 (1972), 1416–1421.
- ² Note that a set of norms alone, while often referred to in the literature as a (legal) regime, does not constitute a regime in the social scientific sense of that term, i.e. an international institution. What is lacking for this to be the case is precisely the behavioral aspect, i.e. application and implementation of the norms and rules which, at a minimum, should show up in the rule-consistent behaviour of regime members.
- ³ See also Sand (1990), 23 ff.
- ⁴ Cf. the chapter by Hanf in this volume.
- ⁵ Cf. the chapter by Weale and Williams in this volume.
- ⁶ For an empirical study of GESAMP see the paper by McLaren (1989). For a critical view of the expertocracy of this forum see Gourlay (1988), 1 ff.
- ⁷ All of these points are made by Peter M. Haas (1990) in his study of the Mediterranean protection regime and, in a similar vein, by Kimball (1992).
- ⁸ See Storm Pedersen and Norup Panild (1992).
- ⁹ Cf. again Weale and Williams in this volume.
- ¹⁰ Saetevik (1988) has pointed to the somewhat perverse impact that ‘excessive’ EC membership had on the (retarding) role played by the EC in the implementation and evolution of the North Sea protection regime: EC members not adjacent to the North Sea codetermined the at times rather obstructive position taken by the EC in North Sea matters. Certainly, this is a rather special case of negative impact of an IGO on regime evolution, and, once more, it is, in the final analysis, more a problem of environmentally reluctant (EC) member states than of the EC as such.
- ¹¹ This point is made, e.g., by v. Prittowitz (1990), p. 266.
- ¹² For a general criticism of IGOs along these lines see Gallarotti (1991).
- ¹³ The general sociological perspective underlying the following formulations has recently been presented in a comprehensive way by Coleman (1990).
- ¹⁴ This is not to deny that IGO staff, in particular in large-scale IGOs, may develop a private interest in maintaining (or even enhancing) their position and hence in drawing private benefits from their public position. However, the danger is often overemphasized, sometimes for quite obvious reasons of political demagogery.

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V. National Science and International Policy

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Hereby it is manifest, that during the time men live without a common power to keep them all in awe, they are in that condition which is called war; and such a war, as is of every man, against every man. . . . Whatsoever therefore is consequent to a time of war, where every man is enemy to every man; the same is consequent to the time, wherein men live without other security, than what their own strength, and their own invention shall furnish them withal. In such a condition, there is . . . no knowledge of the face of the earth; no account of time; no arts; no letters . . . (Hobbes, 1651, p. 82)

1. Introduction

The relationships between science and environmental policy are many and various. At different times scientific findings and theories have been used to arouse public concern, identify problems, mobilize political forces, suggest solutions and indicate the pattern of cause and effect relations governing a particular portion of the natural world. Conversely, governments have wished to use the power of organized science, either as part of its own bureaucratic apparatus or acting as independent and impartial advisers in the form of councils of experts or commissions of inquiry, to provide evidence on policy options, anticipate effects and report on the current state of understanding (see Caldwell, 1990, pp. 21–37 for a discussion of some of these functions). Other, less innocent, forms of relationship have no doubt existed, including selective attention to policy advice coming from scientific advisers by key decision makers, the use of scientific uncertainty to disguise the pursuit of self-interest in international negotiations and the hubris of scientists in thinking that technical capacity could substitute for democratic judgement.

Whatever the various relationships in which science has stood to environmental policy, the study of the interaction of science and policy rests on the assumption that

science, in some sense, matters to policy-making. Tracing the forms of influence of science upon environmental decision-making has become important in studies of international environmental policy, because international resource management and pollution control rest as much upon this interaction as do their domestic counterparts. The study of the relationship between science and international policy is also important because it touches on one of the central debates currently occurring in the theory of international relations, namely the assessment of regime approaches to the study of international order.

As the idea and approach of regime theory emerged in the study of international relations, it has become associated with one important contrast. This is the contrast between what in the Krasner (1983) volume are termed Hobbesian and Grotian perspectives on international order. This contrast is supposed to capture two quite distinct ways in which the relations between states can be conceptualized. On the one hand, the Hobbesian tradition sees the international system as a state of nature in which states seek primarily their own survival and security and in which there is nothing to mediate between conflicting interests but the mobilization of power. On the other hand, the Grotian tradition conceives of the international order as subject to norms and laws, within which the rival claims of states can be evaluated and assessed. On this view power and the threat of power are not the only motivations of state action, but states can also be moved by argument, appeal to norms and the assembled weight of scientific evidence.

The emergence of environmental policy issues onto the agenda of international relations promises to throw new light on this established controversy for at least two reasons. Firstly, many of the most important issues – especially global climate change, the protection of biodiversity and the rate of depletion of natural non-renewable resources – concern matters that are public goods, and in which therefore all countries have an interest in the solution to the problems that are raised. No doubt, in all these cases, as with all other cases of public goods, the extent and level of interest is not identical for all players in the international game – a fact which among other things has implications for the role of leadership in international policy-making (see Underdal in this volume). Nonetheless, there is sufficient complementary of interest for there to be occasions on which the nature of the problem does not impose zero-sum solutions, but allows for the possibility of positive-sum solutions, and this in turn means that there is a greater emphasis upon assembling evidence that can identify what is in the common interest. Secondly, environmental management necessarily has a high scientific and technical component at its core; indeed, policy-makers would often not be aware that certain environmental problems existed unless those problems had first been identified by scientific research. Hence intellectual processes involving argument, reasoning, the construction of evidence and inference from observation are likely to play a significant role in the shaping of international environmental decision-making.

The development of international resource regime theory has been conducted primarily within the Grotian perspective. Thus, Young defines international resource regimes as

institutional arrangements governing the human use of natural resources and environmental services . . . that deal with natural resource and environmental issues cutting across the jurisdictional boundaries of the members of international society or involving the global commons (Young, 1989, p. 10)

The emphasis within this definition of a regime is upon the institutional, and hence normative, constraints that influence international actors. Other writers from the Grotian perspective, like E. Haas and P. Haas, stress cognitive and intellectual elements in the making of international policy. Thus, whatever their diverse and individual viewpoints, all these writers develop regime theory in such a way as to challenge the assumption that power is the primary currency of exchange in international relations.

The assumption of the primacy of power has of course been central, by contrast, to the neo-realist tradition of international relations theory, on which Hobbes's influence has been so profound, and it is well summarized in several pithy sentences from Morgenthau, of which the following is a representative specimen: ". . . a theory of international relations must be focussed on the concept of the national interest." (Morgenthau, 1962, p. 204). On this account, norms and consensual knowledge play only a very limited role in international relations, and key concepts within this conceptual framework include the balance of power, international conditions shaping state behaviour, domestic constraints on the state and the national interest (for a recent summary, see Lagon, 1992, pp. 40–41).

In this paper we wish to consider the questions raised by this general debate in the light of a certain understanding about the relationship between scientific research and evidence and international policy-making. We shall look at various pieces of empirical evidence drawing in particular on recent work on the functioning of the North Sea regime as a way of illustrating and testing some of the propositions that we wish to advance. In particular, we shall be concerned to argue that a simple Grotian perspective is inadequate for understanding the role of science within the functioning of international regimes, not because the exercise of political power is likely to override scientifically driven policy-making (though that is undoubtedly true), but because the practice of science in the making of international environmental policy itself presupposes certain administrative and coordinating institutional structures that only political authority can supply. In this sense we think Hobbes was right to claim that in the state of nature, or its manifestation in the international system, "there is no knowledge of the face of the earth".

2. The Grotian Perspective

In challenging one of the fundamental tenets of Hobbesian neo-realism, writers within the Grotian tradition of regime theory can draw upon a wide range of approaches to politics and international relations, including Simon (1957) on bounded rationality, Schelling (1960) on focal points, Allison (1971) on organizational process in international decision-making, Majone (1989) on the analysis of argument and evidence in the policy process, Sabatier (1987) on the role of social learning and Underdal (1980) on the independent role that arguments of fairness can play in international negotiations. All of these writers have highlighted the non-power elements in important facets of policy-making or international relations and all draw attention to the extent to which intellectual processes of argument, reasoning, analysis and the presentation of evidence shape policy-making.

One example of such processes at work is in relation to agenda setting. Wettstad (1989) has shown how the policy agenda of the North Sea states followed closely the advice provided by scientific experts through the quality status reports that were available before the interministerial meetings in 1984 and 1987. Neither report provided a strong impetus to action and in that sense both set the tone of their respective meetings. However, the 1987 report did signal a shift to concerns about eutrophication arising from nutrient inputs, and this new focus was reflected in the decisions of the ministers. As Wettstad points out, the tone of expert advice was cautious in itself. One might think therefore that in these circumstances it would be unlikely that scientific findings would form the basis for strong political action.

However, there are cases where science does seem to lead policy-makers in directions in which they do not necessarily want to go. One such example is the decision of the UK's Central Electricity Generating Board (as it then was) to retrofit flue-gas desulphurization equipment to 6000 MW of coal-fired power generation. The crucial element of this decision was the discovery of a build-up in sulphur-rich soils in Scandinavia. Research conducted by British and Scandinavian scientists under the Surface Water Acidification Programme (1984–88) revealed that soils in northern Europe have a high affinity for storing sulphur. The existing sulphur bank is a product of industrial activity over the last 150 years, so that now even small increases in sulphur create large marginal increases in the pollutant effect. This discovery appears to have had a significant influence on the attitude of the Board (Weale *et al.*, 1991, p. 181).

However, perhaps the most important example of the claim that international policy can be driven by scientific perception is to be found in Haas's work on the Mediterranean (Haas, 1990a). In this work Haas argues that agreement on scientific evidence and its policy relevance among members of what he terms an 'epistemic community' is an important precondition for successful environmental management. The Mediterranean Action Plan developed from a series of specific

concerns with marine dumping to a more holistic ecosystem perspective under the influence of a consensus among scientists and policy-makers responsible for developing the Plan. Haas (1990b) has also argued that this lesson can be generalized to apply to the protection of the global commons with such issues as ozone depletion and the control of carbon dioxide emissions. In these cases, consensus on the conceptualization of the problem is, in his view, the key factor likely to lead to successful international cooperation.

Haas's claim is not entirely clear. In particular, it is not clear whether he is saying that the existence of an epistemic community is a necessary condition for international action or whether, in appropriate circumstances, it is contingently sufficient. These claims carry quite distinct implications. In particular, to say that an epistemic community is merely necessary but not sufficient is to say that international environmental policy requires a stimulus other than the purely scientific one to carry it along. To claim, by contrast, that an epistemic community can occasionally be sufficient is to suppose that governments are open to persuasion on essentially disinterested terms. The former observation is consistent with a range of evidence, and empirical work suggests that a wide range of conditions, other than the intrinsic plausibility of the evidence, need to be present before science can have an impact (Underdal, 1989, pp. 257–259). The second claim is more ambitious, and constitutes a significant commitment to the view that intellectual factors can play a decisive role over a wide range of international affairs.

To advance the argument that power is not the sole currency of international relations is not, of course, to hold that power is irrelevant. However, the logic of the Grotian argument is to treat the extent to which power is the basis of international agreement as a variable rather than a constant. The value this variable takes is seen within regime theory as dependent upon a range of specific conditions, including the character of the issues, the structure of the problem and the pre-existing institutional context. As these conditions vary, so will the role that pure power plays in international relations. Thus, Haas (1990b, p. 360) conjectures that it is much more difficult to reach collective agreements on climate change than on ozone depletion because the costs of action are much higher in the former case, and this appears tied to the pure power phenomenon under which scientists who actively believe in the need for prompt action are denied access to the administration and leading scientists are leaned on to modify their scientific assessments in public testimony.

There is, of course, a methodological argument in favour of this aspect of the Grotian approach, which is that it is surely preferable to assume that power is a variable rather than assume *a priori* that it must always be the dominant factor in the outcome of international relations. A commitment to the relevance of empirical evidence makes a simple neo-realist position untenable. With this aspect of the Grotian argument we have no quarrel. There is more than sufficient evidence

to refute the claim that power is all there is to analyse in the processes of international environmental cooperation, even when it is an important constraining factor.

However, there is a danger that the Grotian perspective will ignore that which is of continuing relevance in the Hobbesian tradition, in particular the importance of the political and institutional preconditions for the production of consensual knowledge. In seeking to deny that power is all and that knowledge counts in international negotiation, the Grotian risks missing the extent to which the successful production of consensual knowledge itself presupposes a framework of political institutions in the absence of which it is difficult if not impossible to produce the requisite knowledge.

As the quotation with which we opened this paper makes clear, an essential element in the Hobbesian picture is that, in the absence of stable political institutions, science, in the sense of systematized intersubjective knowledge of cause and effect relationships, is impossible. Without a common power, there is no knowledge of the face of the earth, no account of time and no arts or letters. Given his own metaphysical programme, Hobbes himself was of course committed to showing that the political preconditions of science rested upon the successful exercise of political power. Since, for Hobbes, human beings are merely matter in motion and power is the present means to some future good, it follows that the exercise of power is an inevitable accompaniment to all human action. But we can follow Hobbes in his claim that political agreement and stability are necessary conditions of science without also following him in his dubious seventeenth century metaphysics.

In essence the modern Hobbesian has to hold that the production and deployment of consensual knowledge is unlikely within international environmental policy unless there are the appropriate political and administrative conditions, providing authoritative coordinating devices, to sustain its production. That this is a logically distinct claim from the view that power is of the essence of international cooperation can be seen in the important role that authoritative coordinating devices play in purely normative systems such as a system of legal rules. As Hart (1961, pp. 89–91) once pointed out, a social system that sought to conduct its affairs solely by reference to a set of rules without some authoritative mechanism of adapting the rules would incur certain problems. Among these problems we should expect to find uncertainty, in the absence of any procedure for settling doubts about the rules. We should also find that the rules had a static character, since there would be no way of changing the rules as circumstances changed. Finally, we should expect such a system to be inefficient, since their will be no way of authoritatively determining whether or not an infraction of the rules has been committed.

These problems within a system of norms are quite distinct from the more mundane problems of enforcement. Of course, any community of persons who live according to a set of common rules, including the community of nations, will

need some mechanisms of detection and enforcement in the case of violations. But Hart's point is more subtle than this. It is that a system of norms is incomplete as a system of norms unless it contains rules that enable participants subject to the norms to know what their obligations are and how disputed interpretations of the norms are to be settled. These difficulties arise not from ill-will or a desire to breach the norms in question, although in any real world system of norms these elements will almost always be present, but from the ineradicable and persistent ambiguities and uncertainties that surround any system of norms.

The thesis that we now wish to pursue is that reflection on the role of science in the making of international environmental policy, as particularly illustrated in the case of the North Sea, suggests a Hobbesian rather than a Grotian perspective on the authoritative determination of policy evidence. This is not to deny that policy can be norm driven as well as power driven, but it is to insist that the application of norms cannot be taken for granted. In particular, it is to point to a tension between the national scientific systems responsible for the production of knowledge and the requirements of international policy-making.

3. The Hobbesian Perspective

There are a number of features connected with the national administration of the production of scientific knowledge for policy purposes that are likely to create problems for the functioning of regimes. These features involve: the different stocks of data that nations can bring to international agreements; the different methodologies that national scientific systems pursue in the collection and analysis of data; the varying relation that scientific inquiry holds to policy-making in different national systems; the different esteem in which various countries hold different sciences; and, most speculatively, the differences in national intellectual cultures that make certain styles of reasoning more plausible or persuasive in some systems rather than others. We shall present each of these issues in terms of a set of propositions intended to summarize the claims we wish to make.

Countries involved in international negotiations and agreements will typically hold different stocks of data regarding common problems. A common form of international environmental agreement is a commitment by the parties to cut emissions or pollution by a fixed proportion from some baseline date (compare Underdal, 1989, p. 256), and these seems to follow the logic of Schelling's (1960, pp. 67–68) focal point solutions. Clearly, such agreements presuppose that there is reliable data about the status quo in terms of which the achievement in meeting the commitment is to be measured. However, the existence of such reliable data is not to be assumed and an important role for international regimes is to call forth such data.

For example, in the North Sea regime, the Interministerial Conference of 1987 agreed to cut the input of phosphorus and nitrogen into the North Sea by 50% by 1995, taking 1985 as the baseline year. It might be thought that there would be sufficient data available to verify whether such a commitment was feasible or not, but the evidence suggests not. Data emerging from the North Sea regime are highly incomplete with respect to nitrogen and phosphorus. There are no data for Belgium or France, and the data for Sweden and the UK are presented at a high level of aggregation. In the latter case the data are presented within such wide margins of error that a 50% cut could be accomplished within existing bands. By contrast, some countries, like Denmark, provide an extremely detailed breakdown of inputs by source. Moreover, available data sources are not consistent in the figures they give, leading to the suspicion that such data as exist are not reliable.

Where there are missing sources of data, it may take a long time (in the timescales in which policy-makers think) for the problem to be rectified. For example, the Joint Monitoring Group, which provides technical and scientific assessments for the Oslo and Paris Commissions, has long been worried about the poor coverage of the monitoring in the Bay of Biscay and the waters of the Iberian Peninsula. The latest proposals (as of February 1992) do not envisage rectification of this problem until a quality status report is published in 1999 (interview evidence). No doubt policy-makers will be able to use some of the data before the quality status report is published, but it suggests that even moderate data coverage in some international regimes can take at least 25 years to be established.

It may be argued that this is not a phenomenon restricted to international relations. After all, it is common in systems of national policy-making for there to be considerable data deficiencies. Indeed, it is not until some environmental problems are defined as policy problems that systematic effort goes into assembling relevant information. (For example, UK data on the metals content of sewage sludge disposed to the North Sea was subject to poor data gathering prior to 1979; see Parker, 1988, p. 252.) However, the significance of the problem is likely to be greater in an international context. When scientific research is undertaken in the context of international negotiations over restrictions of natural resource use, the economic and political interests of participating countries are likely to be strong, and there is enough work now to suggest that in these circumstances the independent contribution that science can make is limited (see, for example, Andresen, 1989, p. 25). The barriers to the collection of data are therefore not simply technical, but are also likely to reflect national political priorities, particularly when the scientific body responsible for data collection is part of the national civil service bureaucracy.

Just as the coverage of data can take time to develop in international regimes, so the quality of data can be an issue. And this leads to a second proposition. *Different national methodologies are inevitably involved in the collection and analysis of data, leading to the problem of intercalibration.* As List and Rittberger

(this volume, pp. 67–81) point out, one of the main functions of intergovernmental organizations is the harmonization and standardization of measurement procedures and the establishment of intercalibration workshops. Yet, even in a relatively well-developed regime like that of the North Sea, there have been problems of an absence of internationally comparable data deriving from problems associated with lack of comparability in nationally produced data sources. In 1987, the Quality Status Report noted that in relation to estimates of concentrations for organic and inorganic contaminants, caution had to be exercised in comparing the results from different laboratories (Wettestad, 1989, p. 187) and subsequent reports suggest that the problem of intercalibration is both serious and deeply rooted.

The International Council for the Exploration of the Seas (ICES) has historically played the role of trying to improve the quality of data sets in relation to pollution in the North Sea. Its Monitoring Studies Programme began in 1974 with the investigation of contaminant levels in fish and shellfish in the North Sea, and in 1976 it started to assess the intercomparability of laboratories looking at trace metals in sea water. Several intercalibration exercises, which involved advice and recommendations on improving standards from a coordinator, resulted in sufficient improvement in intercomparability for ICES to embark on a three-year Base Line Study of Trace Metals in Coastal and Shelf Waters (ICES, n.d., p. 4).

A review of the monitoring process carried out in 1980–1981 showed that the national monitoring procedures, which formed the basis of the programme, were inadequate for the ICES objectives. So, in 1982, ICES issued a series of guidelines on sampling, the preparation of samples and the reporting of results. These guidelines were tailored to the specific priorities, such as the possible danger to human health, the state of the marine environment or the effectiveness of existing reduction measures (ICES, n.d., p. 1). There now exists a comprehensive set of sampling and analysis guidelines, but simply issuing them does not ensure that methodologies are standardized. In the 1985–1987 Baseline Study of Trace Metals in Coastal and Shelf Sea Waters, it was “. . . apparent that not all participants followed the guidelines for sampling and analysis. This created problems in assessing the results” (ICES, 1990, p. 5).

As well as the general phenomenon of implementation deficit, there were specific sources of problems noted in the ICES study. For example, there were problems with research groups who were inexperienced in collecting and analysing sea water samples for certain trace metals, leading to systematic errors that were “the primary cause of relatively poor laboratory performance” (ICES, 1990, p. 58). Moreover, problems of instrumentation also occurred, leading ICES to the wry observation, in connection with the Intercomparison Programme on Analyses of Polycyclic Aromatic Hydrocarbons, that the “results from some laboratories displayed high variability and indicated the need for some of them to optimize their instrumentation before undertaking the second stage of exercise” (ICES, 1990, p. 59).

Intercalibration is a problem having several dimensions, therefore. Firstly, there are different national scientific practices with respect to the collection and analysis of data, which make inter-country comparison of results hazardous or misleading. Secondly, internationally agreed guidelines may not be followed in practice. Thirdly, behind some of these variations there are not only differences of organizational process in the practice of science in different countries, but there are also material differences in the stock of instrumentation available to different national teams. Moreover, as with differences in national data coverage, these differences of data collection and analysis are deeply rooted and difficult to eradicate. One symptom of this is that 1990 the ICES Advisory Committee on Marine Pollution was only able to say that 'some improvements' had followed the previous year's appeal for data to be submitted to agreed formats and deadlines (ICES, 1990, p. 13).

Within different national systems of policy-making, scientific inquiry will play a different role. International agreements on environmental protection will normally require individual participating countries to take action to implement the terms of the agreement. Usually, there are mechanisms by which countries report back to an international organization or gathering on the extent to which they have carried out their obligations. Even assuming, contrary to fact, that different nations possess information and data of similar quality and coverage, it is clear that the relation of scientific inquiry to policy implementation varies from country to country. In saying this we are not simply thinking about the gross and obvious differences in policy principles that can occur with participants to an international regime, for example the well-known dispute over environmental quality objectives versus uniform emission standards, although these are undoubtedly important. Instead we are thinking about the differences that will occur, even when individual countries are supposed to be doing the same thing.

An example of the sort of contrast that is involved is provided by the implementation of decisions by the 1987 Interministerial Conference on the North Sea. Under the terms of this agreement countries are required to report on the extent to which they have achieved target reductions in certain selected substances like mercury, cadmium and other micropollutants. The use of scientific information in calculating target reductions can vary between different countries. For example, in the figures given for the UK for target reductions of selected substances, the 1995 target figures are given simply as 5% of the value of the 1985 figure, the baseline year (North Sea Conference Secretariat, 1990, pp. 194–196). The Dutch approach by contrast is based upon an inventory of substances, and the target discharges for 1995 were calculated on the basis of a sample for plants in which measures were taken between 1985 and 1989 and for which measures were planned before 1995 North Sea (Conference Secretariat, 1990, p. 135). Not surprisingly, in this second case, the 1995 targets do not simply appear as identical 50% reductions for all substances, but they vary depending upon the substance being considered.

Behind these differences of approach in the translation of scientific data into policy-relevant information, there lie significant differences of administrative capacity and organizational structure in the relation of expertise to policy making, as well as differences in national traditions. It is perhaps not surprising that the Dutch government has access to better quality data on water pollution than the UK government, given the historic importance of waterways in the Netherlands and the willingness of British governments to pursue a dilute and disperse strategy. But there are also important differences of administrative capacity related to the size and composition of the bureaucratic bodies involved. The point about these differences is that the production of knowledge does not take place in an administrative or policy vacuum. The evidence that experts are set to collect and the modelling and analysis they are required to carry out will depend upon the principles of policy-making that are involved. If target-setting is regarded as a process by which planned incremental improvements are monitored and projected forward, the knowledge that is produced will vary from that of a system in which targets are treated as goals stating a notional international obligation.

Different national systems will evaluate the relevance of different sciences differently. At first sight it may seem strange to introduce the differential relevance of sciences by nation state. After all, as Wettestad (1989, pp. 169–170) has pointed out, there would seem to be an obvious core to the sciences that are relevant to, say, marine pollution with physical oceanography providing information on sea circulation and ocean currents, chemistry providing knowledge of organic and inorganic contaminants and biologists providing knowledge of organic and inorganic contaminants and biologists providing information on ecological effects upon species. Moreover, science is itself an international phenomenon, so that to each of the major sciences that have relevance to environmental policy there are large international communities of scholars who exchange results and information. Indeed, on some accounts of international relations it is the ‘low politics’ of international scientific communities that constitute one of the principal bases for international policy agreement.

Despite the *prima facie* implausibility of seeking to identify variations in the esteem with which different sciences are held, there are some reasons for thinking that this factor might be important in an international context. One such reason is that differences of approach characterize different sciences in their treatment of policy questions. Thus, epidemiologists and physicists have been found taking different views on the hazards arising from exposure to radiation from nuclear power stations, a difference which in part rests upon the extent to which each discipline requires there to be an underlying model of causality clearly articulated in order to impute an effect. If such differences can arise between different disciplines in the same country, it seems at least plausible to suppose that similar differences can arise between national policy-making systems, particularly as different sci-

tific disciplines have come to occupy niches in the scientific advisory systems of different governments.

However, the clearest examples to consider are sciences the relevance of which is disputed in the approach to a problem, the best example of which is provided by economic science, particularly in regard to cost-benefit analysis. At the basis of this controversy are the conceptual problems associated with cost-benefit analysis. These conceptual problems are illustrated in the difficulties that economists have had in providing reliable and robust estimates of the monetary value of ecosystem variables. Turner (1991) for example reports significant differences in the economic evaluation of wetlands (varying by a factor of more than three to one), and these differences almost certainly reflect the underlying conceptual problems associated with the methods by which economists seek to place monetary values on non-tradable goods.

In part because of these methodological problems with the foundations of economic analysis, there have been occasions on which the relevance of economic science has been explicitly excluded from international environmental policy regimes. Thus, in the construction of the EMEP (European Monitoring and Evaluation Programme) model for acid rain in Europe an explicit decision was taken to exclude the economic valuation of effects because of doubts on the part of some national representatives that the valuations would be reliable enough to sustain international action (Horndijk, 1991). By contrast the UK government's doubts about the application of the precautionary principle can in part be understood as resting upon a suspicion that much action that is currently undertaken in international environmental policy would not survive a rigorous cost-benefit analysis – an example of which is provided by Mr William Waldegrave's testimony to the House of Lords select committee looking at the EC's proposed *Fourth Environmental Action Programme* (House of Lords, 1987, p. 85).

Finally, and more speculatively, in this section, we consider *the differences of general intellectual culture that provide the context for national scientific policy advice*. Since individual results and findings always have to be placed in a larger context in order to be translated into policy-relevant advice, it is likely that the general intellectual milieu within which this translation occurs will be significant in interpreting the 'meaning' of the advice that is given. To some extent this point overlaps with the previous point, since we can expect to find differences in the disciplinary composition of advisory bodies performing the same function in different national systems. Thus, whereas the German Council of Environmental Experts has included experts in the administrative sciences in its membership, its UK equivalent, the Royal Commission on Environmental Pollution, has not, even though a large part of the Royal Commission's work has actually involved making recommendations about administrative structures in the light of its perceptions of the scientific and policy problems.

However, general intellectual cultures are likely to play a more subtle role in shaping the way in which a problem is perceived and conceptualized. Here one might consider as an example the orientation that a particular intellectual culture has towards systems theory. Our impression is, for instance, that underlying the Dutch National Environmental Policy Plan (1989) there is not simply the theory articulated in the plan about the closing of substance cycles, but a more general view, similar to that found in the work of ecologists like Barry Commoner (1990), which stresses the systemic nature of individual environmental problems. By contrast the intellectual style of members of the British policy community is towards treating problems in a discrete fashion. Thus, UK policy-makers have always held that the practice of sewage sludge dumping in the North Sea is not harmful, and they have sustained their interpretation by reference to monitoring programmes carried out at the dumping sites. Scientists in other countries have criticized this approach for failing to treat the North Sea as an integrated system, in which contaminants move around in unpredictable ways and within which cumulative effects may be noted, for example in the Dogger Bank, at some distance from the sites at which dumping is practised (interview evidence).

4. Implications

Supposing that the above generalizations hold, what implications might be thought to flow from them? Here we can only indicate just two possible implications that may be drawn – one for the theory of international regimes and the other for the design of institutions of international environmental policy.

In terms of regime theory any Hobbesian qualification is likely to make a difference in respect of the willingness to borrow Hayek's idea of a "spontaneous order" (Hayek, 1973, p. 37). A spontaneous order, according to Hayek, is an orderly social structure that is a product of human action but not of human design. A market order, which Hayek calls a 'catauxy' (Hayek, 1976, pp. 108–109), is an example of a spontaneous order in this sense. Through the interaction of buyers and sellers, each respecting the rights of property, it achieves the relatively efficient meeting of wants without anyone in particular seeking or ensuring that goal. Hayek (1976, p. 107) makes it clear that one of the functions achieved by any spontaneous order is that of "bringing about a certain correspondence between the expectations of . . . different persons", thus providing a link with one of the central ideas in regime theory, namely that the regime should provide a point around which actors' expectations converge (Krasner, 1983).

This notion of a spontaneous order was borrowed by Young (1982) in his account of the origin of regimes, in order to stress that a regime, considered institutionally, need not be a product of intentional human action. Young's notion of a regime

was intended to allow for the fact that rules and conventions over resources management may have normative influence upon a set of actors without being explicitly formulated. Regime formation on this account should not be limited to studying formal and explicit processes by which institutional arrangements are established.

Although there is no doubt that regimes may exist as the result of tacit conventions, having a structure like that of Hayek's spontaneous order, the extent to which they are likely to be effective and efficient without moving to a stage of formal and explicit agreement is limited if scientific work and advice depends upon coordinating structures. Regimes may perform the function of enabling expectations to converge, without that implying an optimal convergence of expectations. As we have seen, problems like those of intercalibration exist even when there is a well developed sampling and analysis protocol to guide national laboratories. Simply to rely upon the assumption that information coming from different national systems was comparable would be inconsistent with what we already know. In theoretical terms, this means that we should expect to find improvements in the functioning of international regimes after there has been a process of explicit analysis and redesign of regime activity. It is unlikely to arise as the unintended outcome of purposeful activity directed towards other ends. As well as the idea of spontaneous order, especially important in the initial stages of a regime, we also need the idea of conscious institutional reform according to agreed standards of performance, if we are to move beyond the account of regime origins to an evaluation of their functioning.

In terms of the design of international regimes, the second possible set of implications that we have identified, the problems of coordination and comparability raise questions about the division of labour between national and international institutions in the organization of science. The problem here is that variations in national patterns of data collection can have significant implications for the quality and relevance of consensual scientific knowledge in international negotiations. On the other hand, it would be an inappropriate response simply to seek to eliminate all diversity in scientific work, since there are general reasons for thinking that diversity is of the essence of scientific creativity and advance. If unrestrained conjecture and refutation (Popper, 1963) are crucial to the scientific method, then a diversity of sources of experimentation is desirable and allowing for such diversity limits the extent to which one should seek for an internationalization, and hence standardization, of research and advice rather than the pooling of research and advice from national systems.

One way around this apparent clash of organizing principles is to distinguish those components of the production of scientific knowledge where uniformity of approach is desirable from those components where variety has a function. In the former category one might place baseline data collection and analysis, both of which

relate to problems of data coverage and intercalibration. It is difficult to see what purpose is served by accidental variation in scientific practice in this case, since the intention of existing organizations is to standardize data collection and analysis as much as possible, presumably on the assumption that any bias thereby introduced into the results is of less importance than having genuinely comparable data from national sources.

From our modified Hobbesian perspective the argument here is that existing international organizations lack the capacity to impose on national scientific systems the consistency of approach that is necessary if comparable and reliable data are to be obtained. Thus, with the North Sea the present practice is to divide up the area to be monitored into sections to be covered by different national teams. The Joint Monitoring Group can only play the role of audit in these circumstances. Similarly, draft proposals for a monitoring mechanism within the EC for CO₂ and other greenhouse gases envisage the member states drawing up national programmes for the reduction of emissions, and for monitoring of emissions to be consistent with the work programme of the European Environmental Agency, as soon as it is established. In both of these cases the international dimension of the monitoring is indirect, comprising essentially an audit of the work carried on by national agencies.

An alternative Hobbesian model would see the monitoring and analysis undertaken by an international agency, working to its own protocols and with the discretion to determine uniform methodologies for the estimate of discharges and emissions. No doubt such a body might wish to franchise work to local organizations, but the lines of accountability and management would run directly to the international body, rather than through national monitoring systems.

By contrast, it might be argued that other policy-relevant scientific tasks, most notably the analysis of data and the attempt to develop causal models and impact studies, benefit considerably from national variations in scientific practice and outlook. One does not have to believe oneself in the value of a particular approach to the analysis of a pollution control problem to believe that it is desirable that someone somewhere is convinced of the value of the approach and is prepared to fund its development. This seems to be especially significant with sciences that are marginal to the central activities of an international regime, of which the application of economic techniques of cost-benefit analysis provides a prime example. Of course this means that differences in scientific traditions and orientation will be carried over by national representatives into international negotiation, but this can be regarded as part of the social learning process anyway. The chief difficulties here are likely to be not the differences of perception, but the fact that at the international level there are few neutral apolitical fora within which professionals have their prejudices confronted by other equally well informed professionals (compare Sabatier, 1987, pp. 679–680 on the importance of neutral apolitical fora for social learning).

This division of labour leaves one disputed area, however. This is the relationship between scientific analysis of a problem and the policy strategy to which the advice is related. Consider, as an example, the divergent strategies of the Dutch and British governments in relation to the calculation of target reductions in certain substances going into the North Sea under the 1987 interministerial agreement. One might argue that much would be learnt within the international system if Dutch civil servants had been allowed access to the British data and vice versa so that both parties could apply their respective approaches to the other party's data to identify what the policy options might be. But the interest of this speculation is all too quickly outweighed by its implausibility. No government engaged in ongoing international negotiations is likely to entrust the data on which its national policy position is formulated to other parties to the negotiation. Even a mildly Hobbesian perspective would preclude that possibility. In this crucial area, where understanding is translated into national policy positions, the current limits of international cooperation are encountered. This in turn means that improvements in processes for negotiating international environmental agreements are more likely to come from changes in processes of negotiation than from new techniques for improving the analysis of sensitive national data.

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VI. Leadership in International Environmental Negotiations: Designing Feasible Solutions

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1. Introduction

Proceeding from the assumption that the quality of leadership is one important determinant of success in international problem-solving efforts, this paper addresses two main questions: First, what are the *mechanisms* through which leadership can be exercised in international negotiations, and what are the *capabilities* required to make each of these mechanisms ‘work’? Second, what (if any) implications can be inferred from theories of negotiation and cooperation for the practical *exercise* of leadership? In this paper the latter question can be addressed only with reference to one particular leadership task; viz. the design of politically feasible solutions. The latter question can, then, be rephrased as follows: What are, according to these theories, the basic principles that we shall have to observe in designing solutions that can be adopted and implemented through voluntary international cooperation?

Before pursuing these questions, however, a few words are in order about the concept of ‘leadership’ itself, and the significance of leadership in international environmental management.

For our purposes, ‘leadership’ can be defined as an asymmetrical relationship of influence, where one actor guides or directs the behavior of others towards a certain goal over a certain period of time.¹ Leadership clearly involves the exercise of influence and perhaps power, but only some relationships involving influence or power qualify as instances of leadership (cf Burns, 1978, p. 18). For one thing, a leader is supposed to exercise what might be called ‘positive’ influence, *guiding* rather than vetoing or obstructing collective action. Thus, leadership is associated with the collective pursuit of some common good or *joint* purpose (see e.g. Burns, 1978, p. 19 f; Lindberg and Scheingold, 1970, p. 128). According to this definition, being the first to defect from a joint undertaking would not qualify as ‘leadership’, however great and immediate the impact of that defection might be upon the behavior of one’s partners. Kindleberger (1981) even considers a partic-

ular ‘responsibility’ of behavior to be a defining characteristic of leadership. The notion of a joint purpose also implies that leadership cannot be based *only* on coercion, let alone brute force. Finally, as defined above, a leader-follower relationship is characterized by a fairly consistent *pattern* of interaction extending throughout a certain period of time (e.g. the lifetime of a particular ‘project’). Once in a rare while having a bright idea accepted by some others is not sufficient to make you a leader.

As defined above, leadership is a *relationship* between leader and followers. The *strength* of this relationship may be conceived of as a function of the *supply* of and the *demand* for leadership ‘services’.

As indicated in Figure 1, the amount of leadership actually *supplied* by an actor can most simply be perceived of as a function of two major determinants: *capabilities* and structural positions constituting sources of potential influence, and *behavior*, more or less effectively transforming potential into actual leadership. For all practical purposes, certain capabilities and a certain minimum effort and tactical behavior may be considered necessary, but not sufficient, conditions for leadership. Effort and tactical ingenuity can *to some extent* – but not completely – compensate for a weak power base (see e.g. Bacharach and Lawler, 1981, p. 96 f; Habeeb, 1988, p. 132). And much can be lost in attempts at transforming a strong power base into actual influence.

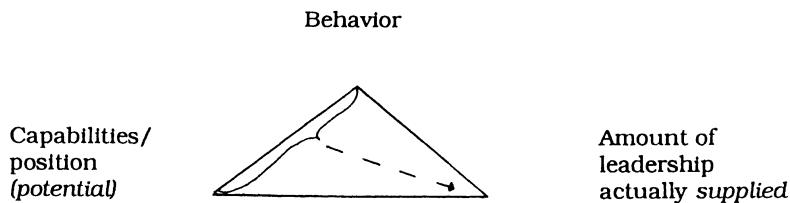


Fig. 1. Potential and actual supply of leadership.

The *demand* for or responsiveness to leadership can similarly be conceived of as a function of characteristics of the followers themselves and of the negotiation problem which they are faced with. Other things being equal, the lower a participant’s rating of his own competence, and the more his interests and values coincides with those of the prospective leader, the more inclined he will be to accept for himself a role as ‘follower’. Similarly, the shorter the decision time, the stronger the element of surprise, and the higher the complexity of the issues and the decision situation, the greater is likely to be the demand for or at least the tolerance of leadership provided by others.² Short decision-time puts a premium on speed, surprise induces actors to search for *new* solutions, and complexity serves to increase decision and transaction costs.³

A leader does not supply leadership in the abstract; what he provides is a particular ‘product’, i.e. a particular set of services designed to achieve some particular purpose. Similarly, followers do not demand, and will not subject themselves to, *any* kind of leadership; they are prepared to let themselves be led only in a particular direction, and perhaps only in a certain fashion. The strength of a leader-follower relationship depends, then, on the extent to which supply ‘matches’ demand, as well as on the availability of other competitive ‘suppliers’.

My objective in this paper is not to study the *significance* of leadership for the outcome of international problem-solving efforts. As indicated above, however, one basic assumption on which the argument is based is that leadership does in fact ‘matter’. A few words should therefore be added in support of that assumption.

Such support can hardly be found in the formal ‘axiomatic-static’ models of bargaining (see e.g. Nash, 1950; Kalai and Smorodinsky, 1975). Assuming perfect information, definite preferences, and a fixed institutional setting, these models leave no scope for actor behavior or leadership to have any *independent* effect upon outcomes. By contrast, scholars studying cooperation on the basis of empirical evidence often point to leadership as one important determinant of success. To give but a few examples: Oran Young (1991, p. 302; cf. 1989, p. 23) suggests that the presence of leadership is a necessary, although not a sufficient, condition for reaching agreement on the terms of constitutional contracts.⁴ Similarly, Lindberg and Scheingold (1970, p. 128) argue that ‘leadership is the very essence of a capacity for collective action’. And Cox (1973, p. 155) suggests that ‘The quality of executive leadership may prove to be the most critical single determinant of the growth in scope and authority of international organization.’ In more specific form, we can find similar arguments in several reports from prominent participants themselves. Thus, in his account of the ‘ozone diplomacy’, the head of the US delegation observes that ‘the activities of a multilateral institution {UNEP} were critical to the success of the negotiations’, and that ‘an individual nation’s {USA’s} policies and leadership made a major difference’ (Benedick, 1991, p. 6). The conclusions offered by these and other prominent scholars and practitioners may not provide conclusive evidence that ‘leadership matters’. But at the very least they seem to suggest that students of international cooperation would be well advised to devote some attention to the logic of political leadership.

2. Three Modes of Leadership

In order to explore further the mechanisms through which leadership can be exercised and the capabilities required to succeed, it seems useful to distinguish between at least three main modes of leadership: viz. leadership through unilat-

action, leadership by means of coercion, and instrumental leadership. In real life these and possibly other modes of leadership will often be found in some kind of combination – one implication being that several of the illustrations cited may well be ‘impure’ cases where more than one of these basic mechanisms are simultaneously at work. As the differences are rather profound, I shall nevertheless examine briefly the logic of each ideal type.

2.1. *Leadership Through Unilateral Action*

This mode of leadership is exercised whenever an actor moves to solve a collective problem by his own efforts, thereby ‘setting the pace’ for others to follow.⁵ Unilateral action may do so through two ‘pace-setting’ mechanisms: one is the *substantive impact* it leaves on the options available to other actors, the other is *social persuasion*.

The former mechanism is activated whenever actions undertaken by one party alters significantly the set of options available to others, and/or the costs or benefits flowing from one or more of these options. This is what happens when a ‘benevolent hegemon’ provides collective goods to a ‘privileged group’ at his own expense (see Olson, 1968; Kindleberger, 1981). The unilateral supply control scheme previously implemented by the world’s leading exporter of petroleum in support of oil prices is one case in point. The intention of the US government to impose unilateral restrictions on the use of ozone-depleting substances is another. Note, though, that unilateral action to provide collective goods need not qualify as ‘leadership’ according to the definition above. The ‘hegemon’ certainly initiates and undertakes problem-solving efforts, but he does not thereby necessarily guide or control the behavior of *others* – and ‘leadership without followers’ would be a contradiction in terms. In fact, to the extent that prospective partners are allowed to be free riders, unilateral action by one actor may *weaken* rather than strengthen their incentives to contribute.

Unilateral action may change the set of options available to others, or the consequences of one or more of these options, in many other situations as well. Thus, by imposing environmental safety standards upon products to be consumed within its own borders, the government of a larger country may alter the structure of incentives facing foreign producers as well, thereby inducing a more general shift towards environmentally benign products.

As indicated by the examples given above, leadership through unilateral action undertaken on its own substantive merits can be provided only by actors occupying a dominant or preponderant position within the ‘basic game’ in question. The leader need not be at the apex of the ‘overall power structure’ of world politics,

but he must have (a) sufficient capabilities to accomplish significant results in a given system of activities all by himself, and (b) sufficient invulnerability to be able to tolerate 'exploitation' by others.

Unilateral action may, however, provide leadership not only through its substantive impact on the set of opportunities facing others; it can work also through *social* mechanisms, notably as a means of *persuasion*. Particularly in situations characterized by high problem similarity, unilateral action may be used for the purpose of demonstrating that a certain 'cure' is indeed feasible or does work, or to set a 'good example' for others to follow. The former line of argument can be found in, for example, some discussions about the feasibility of phasing out certain pollutants, such as CFCs (Benedick, 1991). The latter is advocated by some groups of environmentalists, claiming that by unilaterally imposing upon one's own society stricter standards of pollution control a government can help strengthen public demand in other countries for equally strict measures.⁶ Conversely, by failing to adopt strict standards for itself a government may undermine its credibility as a champion of strict international rules.⁷ Unfortunately, in most circumstances the negative impact of a 'bad' example is likely to be greater than the positive impact of a 'good' one. By imposing or threatening to impose unilateral measures of environmental protection, a government can also strengthen demand within its *own* society for *international* regulations. Thus, in the case of stratospheric ozone depletion the prospects of having to face more stringent national regulations seems to have been one main reason why several US firms joined forces with environmental groups in calling for an *international* regime (Benedick, 1991; French, 1992).⁸ Moreover, in certain kinds of situations – for example those corresponding to what is known as the Assurance game⁹ – unilateral action by one party may help dispel doubts about its real commitment.

The persuasive impact of unilateral action depends not primarily on its substantive impact, but rather on the amount of uncertainty removed or on its moral compellence and symbolic significance. Even actions that by themselves make no substantial contribution towards solving the basic problem itself can *indirectly* make a significant difference by helping to persuade others to follow. Accordingly, while leadership through the substantive impact of unilateral action is a privilege of the strong, exercising influence through the persuasive impact of unilateral action is a role to which also small and weak countries can aspire. 'Cheap' acts may not do, though: The moral significance of a move will often depend, *inter alia*, on the amount of sacrifice incurred by the actor. And so may the credibility of 'indices' (Jervis, 1970, p. 28).

2.2. Coercive Leadership

Coercive leadership works through ‘sticks and carrots’ affecting the incentives of others to accept one’s own terms or at least make a concession. It is based on one actor’s control over events important to others. One actor’s (*A*)’s bilateral coercive potential *vis-à-vis* another (*B*) with regard to a specific set of issue (*i*) can be conceived of as a function of *B*’s relative interest in *i* (U_{ib}) and *A*’s share of control over *i* (K_{ia}) [formally $U_{ib}K_{ia}$] (cf. Coleman, 1973). Control over important events can be deliberately used as a device to reward those who join or comply and/or to punish anyone who refuses to go along or defects from an established agreement.¹⁰ In the coercive mode of leadership such control is deliberately used to gain bargaining leverage.¹¹ Coercive leadership is thus exercised through tactical diplomacy, involving at least the communication of a promise or a threat, and possibly also the fulfilment of that promise (if it succeeds), or the execution of the threat (if it fails). In tactical diplomacy an actor may promise or threaten to do things it would not contemplate *except* for the purpose of influencing the behavior of others. Such promises and threats often involve some kind of links to other issues, involving actors in an exchange of ‘concessions’ across issues. And if each actor pursues his self-interest in a narrow sense, the ‘exchange rate’ will be determined by the degree of *asymmetry* in their interdependence relationship.

Promises of financial and/or technical assistance, in return for joining a certain regime, seem to be a common strategy of inducing cooperation in international environmental management. In some form promises of assistance have figured prominently in, *inter alia*, the negotiations on measures to prevent the depletion of stratospheric ozone as well as in the negotiations on controlling the anthropogenic sources of global climate change. ‘Negative’ coercion – particularly in the form of ‘external’ threats and punishment – seems to be a more rare phenomenon in this field, but it has been successfully used, *inter alia*, by the US as a means of bringing an end to commercial whaling (see e.g. Hoel, 1987).

As these examples indicate, exercising coercive leadership usually entails at least the risk of incurring *costs*.¹² Not only must a leader provide prospective partners with sufficient incentives to accept his own terms or with *disincentives* to refuse to go along; the more coercion that goes into forging acceptance of a certain solution, the more coercion is likely to be required to secure its *implementation* and maintenance. This points to one of the basic assumptions behind the ‘hegemonic stability’ hypothesis¹³; the weaker the relative position of the ‘hegemon’, the higher tends to be the costs incurred in providing coercive leadership – other things being equal. Consequently, a significant decline in the relative power of the leader may undermine the stability of an international regime or agreement established by means of coercion.

2.3. *Instrumental Leadership*

While coercion basically comes down to imposing one actor's preferences on some other(s) – or preventing others from doing so to us – *instrumental* leadership is essentially a matter of finding means to achieve common ends. In the latter mode one actor's guidance is accepted by others either because they become convinced about the (substantive) merits of the specific 'diagnosis' he offers or the 'cure' he prescribes, or because of a more or less diffuse faith in his ability to 'find the way'.

Instrumental leadership pervades everyday life, but it also seems to be more important in international cooperation than formal bargaining theory and 'structural' realism would lead us to expect. The main reason is simply that actors quite often enter international negotiations with incomplete and imperfect information and also with tentative or vague preferences (Iklé, 1964, p. 166 f). Whenever this is so – and some of the 'new' problems of environmental degradation, including that of global climate change, are evident cases in point – *diagnosing* the problem, and *discovering*, *inventing* and *exploring* possible solutions are likely to be important elements of the process (see e.g. Winham, 1977; Haas, 1990). To the extent that problem-solving efforts involve search, learning and innovation there is also some scope for instrumental leadership.

In general, instrumental leadership seems to be based on three categories of capabilities: *skill*, *energy*, and *status*. At least skill and energy may for all practical purposes be considered *necessary* conditions for success; Snidal (1990, p. 345), for example, talks about the need for a 'conjunction of resources and initiative'. And the aggregate impact of the two seems to be largely 'multiplicative' (S·E) rather than 'additive' (S+E) (Sorrentino and Boutiller, 1975). Since all three can be ascribed also to *individuals*, the instrumental mode of leadership is one to which also (representatives of) small countries can aspire. In some respects, notably when it comes to mediation, representatives of small countries may even find themselves in an advantageous position compared to their great power colleagues. We should, however, realize that effective instrumental leadership often requires a substantial amount of human resources. The fact that it took Norway and Sweden large-scale research programs and years of campaigning to convince other European countries to take acid depositions as a serious environmental problem illustrates the point. All being equal, therefore, the smaller and poorer the country, the more rarely can it (afford to) mobilize the amount of expertise and diplomatic activity needed to play a leading role, even in purely instrumental terms.

Instrumental leaders can perform several distinct functions. Inventing or designing 'good' solutions is one; designing institutions or procedures whereby 'good' solutions can be developed, adopted or implemented is another; and developing negotiating strategies conducive to soliciting the constructive cooperation of others

is a third. In this chapter I shall explore in greater depth one aspect of the former function, viz. that of designing solutions that are *politically feasible*. More specifically, I shall explore what the scientific study of cooperation and negotiation can tell us about what constitutes a ‘politically feasible’ solution.

3. Designing Politically Feasible Solutions

Since my concern with political feasibility may seem utterly arbitrary by normative standards, a few words seem in order to clarify the relationship between this criterion and other characteristics of a ‘good’ solution.

To qualify as ‘good’ a solution to a joint environmental problem needs to meet at least four (sets of) criteria: *ecological sustainability*, *economic efficiency*, *fairness*, and *feasibility*. A ‘good’ regime should first of all induce behavior that is ecologically sound or sustainable. Second, a regime should induce allocations that are economically efficient. Not all ecologically sound regimes will do so. Third, a ‘good’ solution should distribute costs and benefits in a way that is recognized as ‘fair’ or ‘just’. Not all regimes that provide for efficiency will also produce ‘fair’ distributions. Finally, if a solution is not only to be invented but also established and implemented, it will also have to be *feasible* – politically as well as technically. This is where the study of negotiations and cooperation may contribute. From a normative perspective, of course, the criterion of political feasibility is clearly a secondary concern; its normative status rests entirely on its *auxiliary* function of enabling actors to accomplish as much in terms of one or more of the other criteria as ‘circumstances’ permit. This auxiliary function is nonetheless an important one; there is a *priori* no reason to assume that any solution attractive by efficiency or even fairness standards will distribute costs and benefits in such a way that it can be adopted through voluntary agreement.

3.1. What Constitutes a Politically Feasible Solution? The Text-book Answer

What can be accomplished through collective decision-making processes may generally be seen as a function of three basic determinants: the institutional setting (determining the set of actors, the agenda, the venue and time of meetings, and the ‘rules of the game’), the configuration of actor preferences, and the total amount as well as the distribution of relevant political resources, including the elusive asset of skill. In exploring the political feasibility of a potential solution, we normally accept all these factors as exogenously determined,¹⁴ and ask three main questions: (1) What are the *minimal* requirements that a solution needs to meet in order to be adopted and implemented under these circumstances? (2) What is the *maximum*

(in terms of some other criterion) that we can hope to accomplish? And (3), how would we design a solution if our only concern were to maximize its chances of being adopted and implemented?¹⁵

International cooperation is essentially a voluntary affair. Accordingly, most cooperative projects will have to pass the most demanding of all decision-making rules, viz. agreement (unanimity). Given this constraint, how would we answer the three questions formulated in the preceding paragraph?

According to what might be called ‘standard text-book wisdom’, the *critical minimum* may be defined as follows: To be ‘adoptable’, a solution must be subjectively *integrative*. A *strongly integrative* solution can be defined as one preferred by all parties to the best alternative that is unilaterally accessible (labelled BATNA by Fisher and Ury, 1981), while a *weakly integrative* option is one preferred by at least one party and not considered inferior to any unilaterally accessible solution by any prospective partner. When three or more actors are involved, the answer becomes slightly more complex. To be established by unanimous decision among a given set of actors ($N > 2$), a solution must not only be integrative but also belong to the ‘core’, i.e. not be inferior to any solution that can be established by some subgroup of actors (see e.g. Riker and Ordeshook, 1973, p. 134 f.). To be successfully *implemented* as well, a solution must also be able to survive the encounter with the problem it has been designed to solve. A solution satisfying this requirement is said to be *stable*. The stability of a cooperative arrangement depends in essence on the extent to which incentives to defect are absent or effectively curbed.

The *maximum* of joint benefits that one can hope to achieve through agreement is a *Pareto-optimal* solution. The Pareto frontier is reached when any further improvement for one party will have to take place at the expense of one or more of its prospective partners – each of whom can refuse to cooperate.

Finally, the general recipe for *maximizing political feasibility* is to design a project so that marginal net gain is allocated wherever it contributes most to increasing the aggregate relative power or influence of the set of actors supporting the measure in question. This principle implies paying particular ‘tribute’ to actors that are (a) pivotal, and (b) not firmly committed to one particular alternative. In the special case where decisions are to be made through agreement among parties equal in power, political feasibility will be maximized if marginal cost is distributed in proportion to marginal gain. Only if this requirement is met will the interests of each party correlate perfectly with that of the group as a whole (Olson, 1968, pp. 30–31).

The latter formula has the advantage of also being a device for maximizing efficiency. The general recipe for maximizing political feasibility will, however, often lead to solutions that are unattractive by efficiency as well as fairness standards. Conversely, there is no reason to assume that a solution scoring high on the latter criteria will also distribute costs and benefits in such a way that it

can pass the test of feasibility. Thus, a legal standard prescribing equal conduct by all parties (for instance, a reduction of certain emissions by x per cent over n years) will sometimes impose the most heavy burden on those having the weakest incentives to contribute. The greater the difference in marginal abatement costs or in marginal damage costs, the less likely that a legal standard will produce integrative outcomes. In order to achieve a politically feasible solution some kind of *differentiation* of behavior must often be permitted (see e.g. Underdal, 1980; Sand, 1990).¹⁶ Similarly, regulatory techniques designed to manipulate actor incentives (e.g. taxes, fees or transferrable licenses) often impose the highest costs on those least able to pay (e.g. Third World small-scale producers relying on older generation technologies). If we want to combine efficiency with feasibility and can find no option distributing marginal costs in (rough) proportion to marginal gain, the general advice would be to look for (a) solutions leaving the distribution of costs and/or benefits indeterminate, or (b) some way of 'decoupling' the question of who should *do* what from the issue of who shall have to *pay* how much of the cost.¹⁷

In formulating the basic 'text-book' answers above I considered the set of participants to be an exogenously given parameter. Good reasons can be given for relaxing that assumption. Instead of asking what characterizes the set of solutions on which a given set of actors can agree, we might ask what characterizes the set of solutions or projects than can *somewhat* – i.e. by *any* set of actors – be established through voluntary cooperation (cf. Hovi, 1988). The answer to the latter version of the question will, of course, differ from that given to the former only in cases where a particular solution can also be established by some subset of actors. Fortunately, such a possibility does sometimes exist. This is definitely so with regard to *capabilities*. Even for some of the major global problems, such as the impact of human activities on ozone depletion and global climate change, a fairly small number of states would among themselves have sufficient capabilities to undertake effective action. The major obstacle is likely to be incentives rather than capabilities. When faced with externality problems such as transboundary pollution or depletion of common property resources even the most concerned governments will prefer and probably also demand that others contribute to the efforts, or at least that others do not actively take advantage of their own sacrifices. Other things being equal, the more intense the economic competition between the two societies, the more sensitive each of them is likely to be to the *relative* costs of environmental policies.

Assume, now, that each actor is willing to contribute to a certain project if and only if his prospective partners (considered as a group) pay a certain minimum of the total cost. Let me refer to the critical minimum required by action i as k_i . If we conceive of the threshold as a certain fraction of total costs, then presumably $0 < k_i < 1$. We can now determine the minimal set of participants that is needed to establish a project by proceeding as follows.

First, find the critical minimum of cooperation that each actor requires from his prospective partners. Admittedly, this may not be a simple and straightforward operation. For one thing, an actor may differentiate his demands upon others. Thus, the EC has made its new CO₂ tax contingent upon an ‘equivalent’ move from the US, but not upon any contribution from any developing country. Another complication is that an actor may not conceive of his choice as simply one between ‘contributing’ and ‘not contributing’. Rather, the interesting question will often be *how much* to contribute, and the answer to that question may be conceived of as a non-linear function of the amount of effort contributed by others (in absolute as well as relative terms). But even if we are forced to abandon the notion of one simple and exact ‘*k*’ value, the fact remains that governments frequently pursue some policy of *conditional* cooperation. And often it will be possible for the observer to get at least a rough impression of what those conditions are. With such information we have a basis for the second step; viz. identifying the (sub)set of *pivotal* actors.

The extreme cases are unambiguous: Any actor without whom none of the others would go ahead is obviously pivotal to the project. It is also clear that any actor whose contribution is not required by any of its partners cannot be pivotal. The reasoning becomes more complex if an actor is critical to one or some of its partners, but not to all. The general rule is that in order to be pivotal to the project the contribution of an actor must – by itself or in combination with the contribution(s) of any party or parties for whom its participation is a *sine qua non* – be necessary to ensure the contribution of some other pivotal party.¹⁸

A brief look at a hypothetical case may help clarify the reasoning behind that proposition. Assume that four parties – A, B, C and D – get together to work out a solution to some collective problem. The contribution of A is by itself critical to B, but not to C or D. In determining whether A is pivotal to the project, we ask, first, whether C and/or D would be prepared to go ahead without B, and also without A+B. If neither C nor D would do so, A is pivotal to the project – although only indirectly, i.e. by being in a position to set in motion a chain of ‘falling dominos’. If C and D are both ready to undertake the project without B, A is not pivotal by its own weight. But since B’s contribution depends on A’s, we also have to consider what would happen if neither A nor B joins. If C and D both find the project still to be worthwhile, we may conclude that the combination A+B is not a pivotal one. If only one of the remaining partners – say D – can tolerate the defection of both A and B, the critical question becomes whether he can accept the loss of C as well. If not, A is indirectly pivotal. If, however, D should be prepared to undertake the project all by himself, none of his prospective partners can be pivotal – individually, or considered as a group.¹⁹

We can now see that the critical minimum of cooperation (measured in terms of participants or aggregate amount of contributions) that is required to accomplish a project is the *lowest level that satisfies the ‘k-value’ of the most ‘demanding’*

pivotal actor. Within the (sub)set of pivotal actors, the general answer offered at the beginning of this section applies.

3.2. Some Critical Questions

What I have called the ‘standard text-book answer’ and the kind of refinement made above all build on a simplistic conception of negotiation as a ‘politics-free’ game whereby unitary rational actors make a collective choice from a given set of options. This conception is no doubt ‘peculiarly conducive to the development of theory’ (Schelling, 1960, p. 4), but it is also inadequate as a basis for the practical engineering of international cooperation. In order to see why, let me introduce some further complications.

The reasoning above is based on two questionable assumptions: viz. that actors have a precise and definite *resistance point* (Walton and McKersie, 1965, p. 41), and that the best solution that is individually accessible (or accessible to some subgroup that can feasibly be formed) constitutes this resistance point. The notion of a precise and definite resistance point is, however, an analytical construct. Available evidence strongly suggests that governments quite often – particularly in complex settings – enter negotiations *without* any explicit decision about what the critical minimum is going to be. A government can normally point to some solutions that it will definitely not accept, and identify others as fully satisfactory. But in between there will often be a grey zone of ‘maybes’ – i.e. solutions that it *might* accept, depending on what the ‘circumstances’ are. The precise resistance point that we are led to search for may be something which can at best be determined *a posteriori*.

More important here is the question of whether we can confidently assume that the critical minimum that an actor will settle for is his BATNA, i.e. the best alternative to a negotiated agreement. I shall argue that equating the two may lead a political entrepreneur to *underestimate* the challenge he is facing, or possibly to ignore tactical opportunities created by the process itself.

It seems that governments typically enter international negotiations with some more or less clear idea as to what they would like to achieve and what will qualify as a *satisfactory* outcome.²⁰ These are highly subjective standards, quite likely to be adjusted as the process develops (Iklé, 1964, p. 165 f). Accordingly, they tend to be elusive subjects of study. Suffice it here to say that standards of satisfaction are, it seems, most often based on the actor’s own notion of what he ‘deserves’ (Thibaut and Kelley, 1965, p. 21) or ‘needs’. Ideas about what one ‘deserves’ or is ‘entitled to’ will often be based on some kind of comparison with other salient outcomes, such as those obtained on earlier occasions or by other actors in a similar position (Thibaut and Kelley, 1965, p. 80). They may, however, also be

derived from some general principle or norm. Particularly in the latter case, aspirations may be 'unrealistically' high. The demands made by the G-77 for a New International Economic Order may be a case in point (Rothstein, 1984). 'Needs' are usually defined in terms of what is required to achieve some substantive objective (such as preventing further depletion of stratospheric ozone), or with reference to 'political' aims (notably those of obtaining ratification and staying in power). The important point to be made here is that – whatever their contents and genesis – subjective aspirations seem to constitute an important standard of evaluation. If so, they may provide an important key to understanding actor behavior.

If I am right that actors have at least *two* benchmarks against which possible solutions will be evaluated – BATNA and some subjective standard of satisfaction – a crucial question for the entrepreneur becomes which of the two constitutes the feasibility limit. A tentative answer may be summarized in four propositions:

- (1) Presumably, an actor will not accept a solution that it considers inferior to its BATNA, even if it would be satisfied with less. However, the possibility cannot be completely ruled out.
- (2) A government is likely to be reluctant to accept a solution that fails to meet its standard of satisfaction, even if the solution is superior to its BATNA. More precisely: an actor is unlikely to accept any solution it considers unsatisfactory as long as it sees some real hope of reaching a better outcome. When no hope of further improvement can be sustained, a government *may* in the end accept a solution that it considers unsatisfactory – provided that it is better than BATNA – but there is no guarantee that it will. And even if it decides to settle for such a deal it is likely to become an uneasy partner, continuously looking for opportunities for renegotiation or, perhaps, for other partners. The general implication is, of course, that a political entrepreneur should take subjective aspirations seriously, and look for some way of modifying expectations that cannot be satisfied.
- (3) A solution that is believed to be (a) better than BATNA and (b) satisfactory is also fully *acceptable*. An actor may, however, not be ready to accept it *yet*. Even an actor fully satisfied with current achievements may continue his search for an even better deal. The amount of energy spent on further search is, however, likely to decline sharply once the satisfaction level is reached.
- (4) Only a *ripe* solution – i.e. one considered to be (a) better than BATNA, (b) satisfactory, and (c) leaving no room for (significant) further improvement – provides a basis for immediate agreement.

The core of the argument is summarized in Table 1.

This brief elaboration may suffice to alert us to two implications of substantial interest for the design of politically feasible solutions. First of all, the critical

Table 1. Hypothesized responses to different kinds of solutions

		Better than BATNA?			
		No Hopes of improvement?		Yes Hopes of improvement?	
		No	Yes	No	Yes
Satisfied?	Yes	Reject and withdraw?	Continue search	Accept (now)	Continue, but be ready to accept
	No	Reject and withdraw	Probably continue	?	Continue search

minimum can be determined with confidence only on the basis of information about subjective ambitions and standards of satisfaction. If ambitions are high, a minor improvement over BATNA may not be sufficient to have a solution accepted. Second, the *timing* of a proposal may be critical. Premature introduction might in fact spoil a solution that could have provided a basis for agreement later. To see why, recall proposition (3) above: An actor who decided to continue negotiating for a better deal can hardly *at the same time* accept the terms presently offered, even if that solution would be better than BATNA and also meet his standard of satisfaction. And the act of rejecting a certain option – even if only for the tactical purpose of giving credibility to its search for a better deal – tends to make that solution harder to accept at a later stage.

It now remains to explain *why* a government may deliberately reject a solution that it believes to be superior to the best available alternative (or, possibly, consider accepting one that it believes to be inferior to its BATNA). The clue is to be found in the concept of *process-generated stakes* (Underdal, 1983, pp. 190–191). These are costs and benefits pertaining to behavior itself, and are either inherent in a particular setting or generated by previous moves. In more operational terms process-generated stakes can be conceived of as the difference between the utility ascribed to the act of *making* a certain move and the utility associated with the direct *impact* of that move upon the substantive outcome of the process.

Most fundamentally, the significance of process-generated stakes can be seen in the fact that human *decisions* tend to be evaluated by standards different from those applied to *outcomes* being ‘acts of Nature’ or products of quasi-mechanical systems such as markets (see e.g. Lane, 1986). A decision is a deliberate act expressing the *will* of the decision-maker(s). Accordingly, it is something for which one or more specific actors can be held accountable. Admittedly, the outcome of a *collective* decision-making process may be different from what some or even all participants had as their most preferred solution. But whenever joint decisions are made by explicit consensus, each party signing the agreement thereby gives its

consent and assumes at least some responsibility for the outcome. If the solution fails to meet the government's aspirations (or those of its constituency), it may very well find that the act of explicitly accepting the deal implies political costs that outweigh the marginal improvement in substantive terms obtained over BATNA.²¹ In such a situation it could be perfectly sensible *not* to settle for the best substantive solution that it can obtain. More generally, actors are likely to have their performance evaluated not only on the basis of the final outcome achieved, but also in terms of the way they play the game. And they may respond to both sets of expectations (Walton and McKersie, 1965, p. 304).

Another key to understanding process-generated stakes is the distinction between what might be labelled 'primary' and 'secondary' effects of negotiation behavior. In international negotiations a move can rarely achieve just *one* purpose; it is likely to have some side-effect that will show up as potential costs or benefits at some point in the process. Take, for example, the act of moving one's position closer to that of the other party. In itself, this is a positional or 'basic' move (Snyder, 1972, p. 222 f) reducing the distance that remains to be overcome. But the actor would be well advised to look for 'communicative' side-effects as well. At least he should ask himself how the other party is likely to interpret such a move in the present context. Thus, it can make a significant difference whether he expects his opponent to read the move as a concession, attributable to the opponent's own firmness, or as an act of accommodation, reciprocating 'favors' received earlier in the process (cf. Pillar, 1983, ch. 3). In the former case, the strategic lesson inferred by his opponent would be 'stand firm', in the latter something like 'pursue mutual accommodation'. We can easily see that fear of running into the former 'trap' may lead an actor to abstain from making a move that would be perfectly sensible evaluated on the merits of its primary effects only. Thus, we should recognize that there is a significant difference between *preferring* and *accepting* or *proposing*. Similarly, communication moves may have 'positional' side-effects. For example, arguing strongly against a certain option implies some degree of commitment, adding new political costs to the act of accepting that option later in the process.

Now, process-generated stakes may also provide *positive* opportunities. International conferences often provide opportunities as well as incentives for governments to demonstrate good will and make constructive efforts to come up with new initiatives. Thus, the fact that the 'Earth Summit' in Rio de Janeiro served as a focal point of attention for actors concerned with environment and development issues did probably generate *some* pressure on many governments to 'perform well' in the eyes of those particular segments of the attentive public. This desire to 'do well' might lead a government to accept or advocate measures it would otherwise not have supported. (Most likely, though, such an extension of an actor's 'acceptance zone' will be marginal.)

Summing up, we may conclude that the presence of process-generated stakes

implies that equating a government's 'resistance point' with its BATNA may lead the political entrepreneur to underestimate the challenge he is facing, or – probably more rarely – to overlook tactical opportunities created by the process itself. One important implication of this proposition is that designing substantive solutions is only one component of the entrepreneurial challenge; he should also be concerned with devising a *path* that can lead actors there. And the latter task may be as intricate as the former.

3.3. From Conceptual Formulas to Practical Applications

In order to apply these constructs and propositions to the design of solutions to specific empirical problems we need to know the subjective utility or value ascribed by each actor to alternative outcomes. What we actually have is usually some estimate of consequences measured in terms of objective 'realia', such as the amount of cutbacks required in the emission of certain pollutants, emission or production quotas, emission charges, etc. In addition, we may know the official positions taken and the arguments submitted by the actors themselves. Both kinds of data may provide important clues, but neither is a reliable indicator of subjective utilities. Assume, however, that we have decided to try to infer utilities from data about the material consequences of alternative options. The task then becomes to determine how actors go about ascribing subjective value to whatever consequences they expect to flow from different policy options.

The default option is to assume that each actor will conceive of subjective utilities as a linear or at least a monotonous function of the amount of goods it obtains or sacrifices. This assumption provides us with a straightforward operationalization, attractive particularly for purposes of extensive research. It is also one that can be defended as being at least as valid as any other equally simple solution. On closer examination, however, we realize that several of its more specific implications can be accepted only as very crude approximations. Suffice it here to consider two of the assumptions implicit in this approach; viz. those concerning motivational orientations and the domestic aggregation of preferences.

3.3.1. Does Each Government Care Only About the Pay-off to its Own Nation?

The assumption conventionally made in rational choice analysis is that each actor cares only about his own pay-off; what happens to others does not enter his evaluation of alternative solutions. This assumption is so common that students sometimes take it to be a defining characteristic of 'rationality'. It can probably also be defended as corresponding better to reality than any other equally simple assumption. Yet we would certainly not accept it as an accurate description of how governments typically go about evaluating policy options in international

negotiations. Governments are, it seems, most often *not* indifferent to the pay-offs obtained by others. The interesting question is not *whether* governments tend to take the welfare of other nations into account, but rather in what circumstances, to what extent, and *how* they do so.

In addressing that question the practitioner need not resolve the philosophical issue of whether governments are in some profound sense driven by pure egoism or not. What he needs to know is which orientation he shall have to deal with in a specific context; whether that approach is being pursued on its own merits or used as an instrument to achieve some ulterior motive is a matter of practical significance only in so far as it affects the size and shape of the settlement range. This should be good news to the entrepreneur, because 'tactical' altruism will often be very hard to distinguish empirically from the genuine concern for the welfare of one's prospective partners.²²

Research on international negotiations has so far provided only bits and pieces of empirical evidence showing how decision-makers actually go about evaluating policy options. Let me nonetheless, in a summary fashion, offer my interpretation of available evidence:

- (1) Actors in international negotiations tend to evaluate options in partly comparative terms.

The crux of this formulation is the word 'partly'. It is used to suggest (a) that actors typically consider their own pay-off *as well* the pay-offs obtained by others (mixed orientation); and (b) that actors may be indifferent to the achievement of *some* prospective partners, on some issues, and within some range of pay-offs, but rarely if ever to *all* parties, on all issues, and with regard to the full range of potential outcomes. Each government is likely to have some 'zone of indifference' where it evaluates outcomes in strictly individualistic terms. But in some respect and at some point its notion of what qualifies as a 'satisfactory' or 'good' solution will take some account of what others obtain or demand.

- (2) Two forms of comparative evaluation seem to be particularly common in international negotiations: 'defensive competitiveness' and 'constraining altruism'. These two perspectives are not only mutually compatible, but also to some extent derived from the same basic concern.

A competitive orientation is conventionally defined as a strive to maximize one's own pay-off relative to that of one's opponent(s). Thus, if actor A adopts a competitive approach towards B, A would try to maximize $(U_a - U_b)$, or possibly (U_a/U_b) . The defensive version suggested in proposition (2) portrays actors as being concerned with *not losing* rather than with 'winning'. The general function would be of the form

$$U_a = V_a - k_a^b (V_b - V_a)$$

where k_a^b is A's 'coefficient of competitiveness' towards B, and V_a, V_b is the 'pay-off' to actors A and B respectively (cf. Grieco, 1988, p. 500).²³

The notion of defensively competitive behavior is linked to the concept of 'satisfaction level' introduced above. We assume that actors develop some more or less clear idea about what will qualify as a 'satisfactory' solution, and that this level of satisfaction typically will be defined in absolute as well as comparative terms. If an actor adopts a defensively competitive perspective his subjective utility tends to decline sharply as his pay-off falls below his 'comparison standard'. On the other hand, once this level is reached the marginal utility of further improvement in *relative* terms also tends to decline, though probably less sharply. The general pattern is indicated in Figure 2.

What I have called a 'defensively competitive' approach is a benign version of the competitive orientation. Similarly, the kind of cooperative motivation that seems to be most frequently encountered in international negotiations is a weak one. It can most accurately be described as a set of soft *constraints* on the pursuit of self-interest. The term 'constraints' is used to indicate that the norms and principles in question need not be actively pursued by everyone or even by a majority of actors. Rather, the basic assumption is that most governments and states (tacitly) do recognize certain ethical principles and norms as valid or legitimate, so that at least if seriously challenged to honor one of these, they will do so – unless they are able to counter by invoking some other principle of equal or higher status. In fact, there are numerous indications that governments *do* accept certain principles and norms as valid even when the immediate implications are to their own disadvantage.²⁴ Thus, it seems clear that all governments in the rich parts of the world do accept the principles of 'blame' and 'capacity' (See Table 2) as valid criteria for distributing the costs of measures to reduce the emissions of 'greenhouse gases', even though these principles clearly would leave their nations with the lion's share

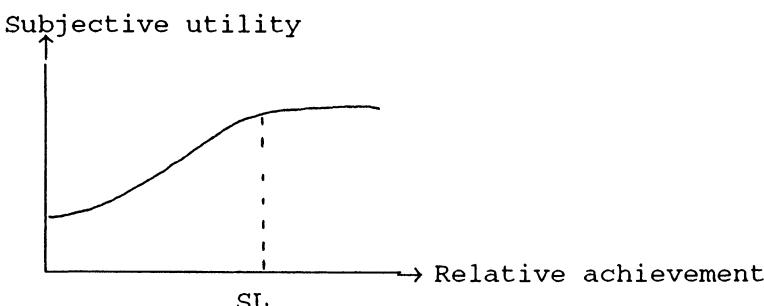


Fig. 2. The defensively competitive orientation: subjective utility as a function of relative achievement. (SL = satisfaction level)

Table 2. Four general principles of equity

Focus on		Objects to be distributed	
		Costs	Benefits
	Cause	Blame	Reward
	Effect	Capacity	Need

of the bill. And although probably exploiting these principles for tactical purposes, there can be no doubt that most LDC leaders strongly subscribe to these criteria, at least in this particular context. Young takes the general argument even further, suggesting that 'Equity . . . is an immediate concern that evokes strong feelings on all sides' (Young 1989a, p. 369), and that actors in international regime negotiations tend to be more concerned with equity than with efficiency.

More empirical research is needed to determine the actual status of different principles and norms in intergovernmental negotiations. But among those that seem to be frequently invoked and rarely if ever explicitly disputed are certain basic rights (including some fundamental human rights and the right of states to exercise their national sovereignty) and certain general notions of equity, including those listed in Table 2.

Briefly, the principle of 'blame' implies distributing the *costs* of solving a particular problem in proportion to one's relative 'guilt' in causing or aggravating it (as in the Polluter Pays Principle²⁵). The principle of 'reward' requires that *benefits* be distributed in proportion to each party's relative contribution to providing a certain good. Similarly, the principle of 'capacity' implies that the costs of a project be distributed so that the marginal costs of the parties are equalized (as in progressive taxation), while distributing benefits according to 'need' is a device for equalizing the marginal *utilities* derived from a scarce good.

In addition to these and other general principles of equity, several norms and principles specific to the issue-area in question may be invoked. In the area of environmental management the latter category includes notions such as the 'common heritage of mankind', the proviso of 'sustainability', and more radical conceptions of moral imperatives, giving the rights of Nature priority above the welfare of Man. As can be seen in discussions about whaling and the appropriate regime for Antarctica, preservationist ethics pose a particular challenge to traditional notions of resource management and also to the use of cost-benefit analysis as a tool for environmental policies more generally.

We can now see that the two modes of comparative evaluation sketched above may be derived from the same basic concern. A defensively competitive approach may, at least in part, be a response to the risk of becoming subject to 'unfair' treatment oneself. The recognition of normative constraints on the pursuit of self-

interest can be seen as an acknowledgement that the rights and principles that one would like to be able to invoke oneself may legitimately be invoked by others as well. As interpreted above, the two evaluation perspectives are therefore to a large extent complementary rather than mutually exclusive.

- (3) The relative weight given to different evaluation perspectives is likely to depend on a number of circumstances, including the overall affect ‘load’ in the relationship, the relative strength of one’s partner/opponent, and the domestic position of the government or regime itself.

Other things being equal, the more friendly the overall relationship, the weaker the relative position of one’s partner or opponent, and the more secure its own domestic position, the more likely a government is to lean towards a cooperative orientation. Conversely, a government is likely to lean towards a competitive mode of evaluation if the overall relationship is characterized by hostility, if the opponent is about equal in terms of size, wealth and other characteristics that may serve as criteria for distribution, and if the domestic position of the government is weak and insecure.

3.3.2. Do Governments Pursue National Interests? Strictly interpreted, the default option of conceiving of subjective utility as a monotonous function of the physical goods or economic value obtained or sacrificed requires either one single decision-maker (a ‘dictator’) pursuing the objective of maximizing net national pay-off, or some pluralist system distributing influence over policy decisions in proportion to the impact of these decisions. Neither of these assumptions provides a generally accurate description of the policy-making process. And they become particularly questionable when applied to issues characterized by certain asymmetries between costs and benefits. Environmental management is a case in point.

Environmental degradation most often occurs as a side-effect of perfectly legitimate activities undertaken for other purposes, such as for example industrial or agricultural production, transportation of people and goods, etc. The benefits derived from these activities are concentrated to specific social groups, certain, immediate, and often of great importance to those concerned. By contrast, side-effects in the form of environmental damage are often widely spread or indeterminate, uncertain or even unknown, distant in time and/or space, and for most victims a marginal concern. Other things being equal, we would clearly expect the former kind of consequences to generate more political energy than the latter. No wonder that the political organization of most societies has a strong institutional bias in favor of *producer* concerns and interests.

As the environmental impact of human activities became more pervasive and better understood, at the same time as increasing affluence led Western societies to shift their ‘indifference curves’ in favor of environmental quality, the demand

for policies that could 'restore the balance' increased. And governments responded; new and more strict laws and regulations were passed, specialized institutions for environmental management were established or strengthened, and budgetary appropriations for conservation purposes increased. But as the problem to be solved is essentially a side-effect of other activities, environmental policy cannot simply be *added* to other policy commitments. The success of environmental policy depends to a large extent on its ability to *penetrate* those activities that cause damage to the environment. Effectively integrating environmental concerns as premises in the making of decisions regarding these activities themselves usually requires more political energy and institutional capacity than merely having a new commitment added to the public agenda. This is so because the activities to be modified are in most cases well established systems or patterns of behavior, governed but also protected by their 'own' rules and institutions, and sustained by real self-interest on the part of consumers as well as producers. The development of environmental policy therefore tends to follow a pattern characterized by a substantive gap or at least a significant time lag between declarations of intentions and general policy doctrines on the one hand and 'significant deeds', particularly those impinging upon established policies, institutions and activities, on the other.²⁶ More energy is usually required to *change* established policies or institutions than to maintain the status quo. And the 'periphery' of established policies and arenas is more easily conquered than the 'core' (cf Majone, 1989, ch. 7).

The same mechanisms also affect the development and implementation of international agreements, particularly those pertaining to complex global problems. To indicate how, I shall first offer a very brief outline of what seems to be the typical pattern of development of public policies, and then explore more explicitly some of the basic assumptions upon which the general argument is premised.

Imagine a UN conference convened to work out a joint program of action to cope with some problem of global environmental change. In the initial stages of intergovernmental policy-making, discussions about problem 'diagnosis' and possible solutions are likely to be framed in rather general terms. The problem itself is truly global in its ramifications, and the policy options being discussed at this stage are likely to be quite general, and the domestic distribution of costs and benefits to a large extent indeterminate. So far, the issue can legitimately be claimed to fall largely within the domain of the Ministry of the Environment and, perhaps, the Ministry of Foreign Affairs. As policy ideas are further developed and specified, however, it becomes increasingly clear that many of them will have substantial consequences for one particular sector of the economy or some distinct social activity. On their own merits, these measures would normally fall largely within the domain of 'sector' ministries or agencies. Moreover, they are likely to activate the 'clients' concerned and their organizations and representatives. Over time, this re-definition of the issue and the 'take-over' by specialized sector agencies are likely

to reinforce each other. Gradually, what started out as a 'grand design' to cope with a major collective problem is likely to become decomposed and redefined into 'micro-issues' of sectoral policy (industry, agriculture, transportation etc.), and 'captured' by the institutions and segments normally in charge of such issues. And seen from the latter perspective the policy measures in question will most often look considerably less attractive or urgent than they did when seen as integrated parts of a more comprehensive environmental program. As a consequence, there is a serious risk of ending up with what might be called a *vertical disintegration* of policy (Underdal, 1979, p. 7) i.e. a state of affairs where the aggregate thrust of 'micro-decisions' deviates more or less significantly from what policy doctrines and principles would lead us to expect.

The kind of analysis suggested above has several implications for the craft of designing politically feasible solutions. First of all, it clearly suggests that there is *a priori* no reason to assume that domestic policy-making processes will generally lead to solutions maximizing net national pay-offs. The greater the incongruity between the distribution of costs and the distribution of benefits, the less likely that the domestic aggregation of preferences will lead to policies maximizing net national pay-off. Moreover, it may help us realize that securing the implementation of international agreements is not merely a matter of removing or curbing national incentives to defect. Different 'levels' of policy tend to generate different kinds of decision games, involving to some extent different (domestic) actors, with different perspectives, interests and capabilities (Allison, 1971). As a consequence, vertical disintegration of policy is a very real possibility even when a government is perfectly sincere about its international commitments. 'Grand designs' to deal with complex global problems seem to be particularly vulnerable to the disintegrating impact of the 'micro-games'.

On a more specific level, the analysis clearly suggests that from a feasibility perspective the 'ideal' solution will, at least in the 'business as usual' scenario, be one combining public virtue with private profits to organized interests. It is a major political handicap of environmental policy that it is relatively poor in terms of such options. Some can be found, though: in the global climate change issue, joint public investments in the development of technologies for utilizing more environmentally benign sources of energy can be one example. Another could be clean-up assistance to Russia and Eastern Europe in the form of technology purchased from Western producers, via government budgets. It is important to keep in mind that the tool-box of environmental policy includes not *only* restrictions and taxes or fees imposing costs on (specific segments of) society. Secondly, it helps us appreciate the importance of *institution-building*. Having a 'progressive' principle incorporated into a framework convention *may* be a significant achievement, but there is a very real risk that – left to themselves – at least some governments will fail to deliver the specific deeds required to implement the principle. By establishing

procedures and institutions for, *inter alia*, regular performance reviews or follow-up conferences additional ‘energy’ can be generated and put to work on the issue. Finally, the kind of analysis undertaken above may help us appreciate the fact that designing compensatory arrangements to attract the support of states suffering a direct loss from a certain solution can be a far more delicate undertaking than the unitary rational actor model would lead us to expect. The greater the incongruity between the distribution of costs and the distribution of benefits, the more likely it seems that some kind of ‘distortion’ in the domestic decision-making process on one side or the other will upset the deal.

4. Concluding Remarks

Some may argue that notions of political ‘engineering’ and solution ‘design’ must be based on a misconception of the nature of instrumental leadership. Leadership is, one might argue, at least as much a matter of ‘art’ or ‘craft’ as of science and calculation. Moreover, to the extent that notions of ‘engineering’ and ‘design’ are at all appropriate in this context, one may argue that these activities should be conceived of not as a ‘one-shot’ application of some construct or formula from bargaining theory to a specific problem, but rather as an incremental process of trial-and-error, through which tentative ideas are adjusted and reformulated until a sufficiently broad consensus is reached.

There is substantive merit in both these lines of argument. Arguably, political leadership does rely as much upon the intuition of the artist and the experience of the skilled craftsman as upon the calculus of the engineer. Yet, it seems hard to deny that instrumental leadership *also* involves a significant element of (strategic) calculation, and that this particular aspect is somewhat more ‘researchable’ than that of ‘artistic’ skills. If the academic study of negotiation and cooperation can ever produce useful inputs to praxis itself, it seems more likely to do so by refining principles of calculation than by uncovering the secrets of intuition or the techniques of artwork.

Students of negotiation may be well advised to shift some of their attention from ‘synoptic’ solution constructs to strategies of incremental adjustments. The latter approach implies rephrasing the question of solution design as follows: how can a project be adjusted and redesigned so as to make it (more) feasible? This question leads us to focus our attention on *techniques of adjustment* – including, *inter alia*, coupling or decoupling of issues, adding or subtracting participants, decoupling the ‘sum-function’ of a regime from its distributive function, providing scope and incentives for cooperation to evolve incrementally, and decreasing the precision and specificity of actor commitments. But even if we adopt the incremental approach, the kind of questions that I have addressed in the preceding section of this

paper would still be important to the exercise of instrumental leadership. Even in a process of trial-and-error, it certainly helps to have some idea of what characterizes the solution that we are looking for.

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Notes

- ¹ This is a rather crude definition, but it seems to capture the essence of those provided in, inter alia, *The Encyclopedia of Social Sciences* (see vol. 9, p. 8), *The Handbook of Social Psychology* (cf Gibb, 1969; p. 212f), and Burns, 1978; p. 18.
- ² Compare findings in the study of crises management, e.g. Hermann (1972).
- ³ I am grateful to Albert Weale for reminding me that transaction costs can be a very important determinant of the demand for or tolerance of leadership.
- ⁴ This is, as Young himself points out (1991, p. 302), a 'strong' hypothesis in the sense that one single observation of 'success' without the presence of leadership is sufficient to falsify it. On closer examination, however, it seems that Young's definition of leadership – 'the actions of individuals who endeavour to solve or circumvent the collective action problems that plague the efforts of parties to reap joint gains in processes of institutional bargaining' (Young, 1991, p. 285) – reduces this proposition to a more trivial statement.
- ⁵ The term 'unilateral' may here be interpreted liberally so as to include not only actions undertaken by *one* single actor, but also actions undertaken by a (small) subgroup of parties acting as a united coalition.
- ⁶ If unilateral action produces *positive* externalities there is, however, a real risk that the persuasive impact of a good example will be offset by negative effects on partner incentives. Thus, if pollution control measures undertaken unilaterally by one country help protect the environment of its neighbors as well, the latter may very well find that their own optimal levels of abatement are now lower than they would otherwise have been. The general lesson may be stated as follows: Before relying on the intrinsic persuasiveness of a good example to carry the day, check whether and to what extent unilateral action produces positive externalities as well.
- ⁷ This is the principal reason given by the Norwegian government for promoting and striving to implement North Sea regulations imposing larger abatement costs upon sparsely populated regions than the environmental damage caused by emissions from these parts of the country would seem to justify.
- ⁸ A less benevolent interpretation would be that these firms tried to use international regulations as a vehicle for turning technological innovations into competitive advantage *vis-a-vis* foreign companies who still had to rely on CFCs.
- ⁹ The basic problem of the Assurance game is that although both (all) actors prefer mutual cooperation to any other outcome, cooperation is not a *dominant* strategy for any of them. In fact, being the only one to contribute is the *worst* of all possible outcomes. This implies that whenever some amount of uncertainty pertains to the choice of one's prospective partner(s), an actor faces a dilemma.

- ¹⁰ Notice that as used here, the word ‘coercion’ refers to the use of promises and rewards as well as threats and punishment. In the context of cooperative problem-solving, ‘positive’ instruments are, presumably, more frequently used than ‘negative’ ones.
- ¹¹ This formulation raises the question of what to make of moves that are coercive in *effect* but not in *intent*. Such moves may clearly be *relevant* to the exercise of leadership, but if we conceive of leadership behavior as a *deliberate* effort at guiding others, they will not be an integral part of that effort.
- ¹² In this regard there is an important difference between ‘positive’ and ‘negative’ coercion: Promises entail costs if they *succeed*, threats are costly if they *fail*.
- ¹³ Another basic assumption is that regime *preferences* is a function of a nation’s relative *power*. More specifically, a decline in relative economic strength is assumed to weaken a ‘hegemon’s’ preferences for free-trade and other liberal regimes (see e.g. Kindleberger, 1981; Gilpin, 1987, Ch. 3). The relevance of this argument to other (‘non-liberal’) kinds of regimes is not clear.
- ¹⁴ This assumption serves a purely analytical purpose; it is not offered as a description of the constraints typically faced by instrumental leaders. A political entrepreneur *need not* accept preferences and institutions as given parameters; in fact, he may work to modify both.
- ¹⁵ Note that these are *two* sets of requirements, one pertaining to adoption, the other to implementation. In fact, some of the techniques that can be used to facilitate agreement – e.g. despecification of commitments, and issue linkage – tend to gloss over some persistent disagreement. Conflicts unresolved during the negotiations are quite likely to become re-activated and strain the process of implementation.
- ¹⁶ This applies to efficiency as well. However, the *pattern* of differentiation required to achieve efficiency may be quite different from that required to make solutions politically feasible.
- ¹⁷ For example, measures to protect tropical ecosystems will obviously have to be undertaken in and by nations in the tropical zone, but unless other nations are ready to pay a significant share of the costs involved, the level of protection actually achieved will almost certainly be suboptimal from a global perspective.
- ¹⁸ The pivotality of an actor is likely to be not merely a function of the tangible costs of its defection to prospective partners, but also a matter of its symbolic significance, particularly in relation to notions of fairness and equity.
- ¹⁹ The notion of pivotality is also important to the building of *coalitions*. Information about whose contribution(s) is (are) considered critical by whom provides a basis for ‘strategic sequencing’, i.e. determining the sequence in which potential coalition partners should be approached (for the general argument, see Lax and Sebenus, 1991, p. 173 f.). If, for example, a contribution from B is critical to C but not vice-versa, then it seems wise to try to secure the support of B before approaching C.
- ²⁰ There are two different levels of ambition. The former corresponds to what Walton and McKersie (1965, p. 42) label ‘target’, while the latter seems to be roughly equivalent to the concept of ‘comparison level’ as defined by Thibaut and Kelley (1965, pp. 21/81 f.).
- ²¹ Presumably, a government would accept an ‘unsatisfactory’ solution (S_a) if, and only if, the following condition is fulfilled:

$$S_a - q_a(SL_a - S_a) > W_a^0,$$

where SL_a is the country’s satisfaction level, q_a is the government’s ‘sensitivity coefficient’ to ‘failure’ (presumably, $1 < q_a > 0$), and W_a^0 is its BATNA. Moreover, recall the equation is based on the assumption that $SL_a > S_a$.

- ²² Sometimes it may even be hard to determine whether an observed pattern of behavior is derived from a certain motivational orientation or from a certain structure of the interdependence relationship. Thus, a state may promote the interests of another out of genuine or tactical concern for the latter’s welfare, but also – if their interests are positively linked – as a side-effect of working for its own self-interest. Conceptually, however, the distinction is clear: motivational orientation is a question of the *criteria* used in evaluating policy options; the correlation of interests is a function of the *structure* of an interdependence relationship.

- ²³ This formulation is inspired by Grieco's concept of 'defensive positionality', but it differs from his in some respects – the most important being that his notion is derived from the assumption that in an anarchical system each state will have to be concerned about relative power as a means of protecting its own security, while mine is derived essentially from assumptions about the nature of domestic politics.
- ²⁴ Experimental evidence suggests that this applies to individual behavior as well (see e.g. Kahneman, et al., 1986).
- ²⁵ The official rationale behind the application of the PPP at the international level refers, though, mainly to considerations of economic efficiency (see e.g. OECD, 1975).
- ²⁶ A few issues acquiring high symbolic significance are likely to stand out as exceptions confirming the general pattern.

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VII. Understanding the Formation of International Environmental Regimes: The Discursive Challenge

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1. Introduction

What has happened when an international regime has been formed? This is the underlying question in this paper.¹ Obviously, a group of states have agreed to commit themselves to some kind of behavioural standards, more or less constraining and enabling. But what kind of processes produced their decision to initiate the formation or at least to join in the formation?

For two decades this question has been discussed by a group of theorists who conceive of states as basically monological, i.e. self-contained, goal-seeking actors trying to grapple with the problem of collective action. For reasons I will return to, I coin their approach strategist. In recent years, these theorists have been attacked by a heterogeneous camp of scholars rejecting both the monological ontology and the positivist methodology of strategist approaches. In his presidential address to the International Studies Association, Robert Keohane (1988) described them as 'reflective'. I choose instead the term *discursive* because it does not have the monological connotations as does Keohane's: the basic assumption of discursive approaches is that contentious policy issues are socially and politically constituted discourses, or ensembles of ideas; concepts and categories through which meaning is given to phenomena.²

One of the observations prompting this paper is that these opposing camps seem quite satisfied to carry on their parallel discourses without taking seriously the onslaughts of the other. There are very few instances of scholars mainstream international relations seriously considering the validity of the discursive attacks, and vice versa. This was entertainingly clear in an early battle, initiated by Richard Ashley's (1984) efforts to question the foundation of the neo-realist approach and was escalated by the crispness and sourness of Robert Gilpin's (1984) response. An even higher priest in the neo-realist tradition, Kenneth Waltz (1986), was equally short on the parallel line of objections voiced by Robert Cox (1983).³ And while Keohane (1988, 1989) appears to advocate closer interaction and exchange between

the two camps, admission to this new theoretical partnership is explicitly restricted to those who accept the basic positivist tenets of his own approach. As expected, this did not go uncommented upon by the discursivists (Ashley and Walker, 1990, p. 266). One qualification is necessary, however: since the late 1980s the establishment journal *International Studies Quarterly* has been prepared to give access to the challengers. This cannot alter the conclusion, however, that most established theorists in the field have been divided from their discursive challengers by profound and mutual contempt.

The purpose of this paper is to explore whether this division is necessary. Specifically, I will outline major theoretical *components* of the challenge and try to apply the insights of these challengers to efforts to understand international regime formation. Relating them to the far more established strategist approach to the study of regimes, I hope to shed some light on the extent of their *compatibility*, i.e. whether mainstream and discursivist approaches may be integrated without being deprived of their souls. This purpose stated, it goes without saying that I make no pretence whatsoever of presenting a comprehensive account of either the broad traditions or the specific authors referred to. Basically, it is an exploratory paper, sensitive to possible linkages between hostile camps.

After briefly defining the subject matter – international regimes – I will offer an account of the strategist approach, demonstrating both the tension between the structural and processual versions of it and the limitations they may imply on the analysis of international relations. These limitations, I argue, can be overcome by tearing down the walls separating them from discursive theory. While Section 4 gives a simple typology of the latter, highlighting the distinction between modernist and post-modern discursivism, Sections 5 through 7 aim at fleshing out the ways key elements of discursive theory can support and strengthen strategist accounts of international regime formation. Ideas formulated by Jürgen Habermas and Antonio Gramsci are employed to reduce some of the indeterminacy of strategist theory, related both to the choice between structural and processual versions of it and to the predictions produced by the latter. And suggestions by Richard Ashley are used to expose the hidden possibilities and subtle power embedded with in the problematic of international regime formation. At no stage do I raise the issue whether these writers would approve of being hired to strengthen strategist explanations of social phenomena.

2. International Environmental Regimes

Faced with the environmental challenges of an increasingly interdependent world, a possible response is for states to pursue the formation of international environmental *regimes*, seeking to restrict state behaviour in areas of relevance to the natural

environment.⁴ For the purpose of this paper, a regime is defined as “. . . practices consisting of recognized roles linked together by clusters of rules or conventions governing relations among the occupants of these roles”, pertaining to “. . . well-defined activities, resources, or geographical areas . . .” (Young, 1989a, pp. 12–13). It involves a set of rights and rules, and usually more or less formalized procedures for handling social choice.

Let us immediately recall here the intervention of Kratochwil and Ruggie (1986), that the central place in this definition of shared expectations and roles already points beyond the conception implied by its inventors of the regime as something objectified and external to the actors. This is an early discursive comment to the question of international regimes.

3. Strategist Approaches to Environmental Regime Formation

Strategist approaches try to come to terms with international regime formation by building a naturalistic social science: they begin with simple assumptions about rationality and then predict how individuals will behave in a given set of conditions (White, 1988, p. 11). Keohane (1988, p. 381) terms this approach ‘rationalist’, but as the debate between scholars of mainstream international relations and their challengers deals, *inter alia*, precisely with how to conceptualize rationality, it does not seem appropriate to privilege one of these views by terminology.⁵ Strategist approaches come in two versions: structural and processual. In order to see what the challengers criticize, let us briefly apply them both to international regime formation.

While elsewhere elaborating on process variables,⁶ Underdal (1987) offers a *structural* approach to international cooperation by highlighting the configuration of power and preferences. He identifies two types of interdependence that may render uncoordinated state behaviour suboptimal and thus generate an integrative potential. One is *cost-efficiency*, implying the presence of synergy or contingency relationships among actors. The second type is *incongruity*, where the costs and benefits produced by actor behaviour are represented by a non-proportional subset in their calculi. This will be the case if the problem involves externalities or competition.⁷ In general, integrative potentials stemming from cost-efficiency interdependence are tapped more easily than those from incongruity interdependence (Underdal, 1987, p. 173): the former problems are more benign. Though it is not always done, *power* can be introduced in such a scheme by delimiting the set of integrative solutions, either directly through coercion or benevolence as in hegemonic stability theory, or indirectly as unequal ability to manage without cooperation.

The strategist line of thought is not without internal tensions. While retaining the notion of goal-seeking, monological actors, Young (1989b, 1991) offers several

reasons for reducing the focus on structural power and formalized acceptance zones in the analysis of regime formation. When states negotiate a new regime, overt power is usually employable only at prohibitive costs. Moreover, national interests are often unclear because a proposed regime will apply across a wide range of situations and over an extended period of time. In this setting, a set of factors associated with the process itself will impact on the negotiations. First, the presence of *solutions* with certain properties that make them attractive to all parties, such as simplicity, previous application, apparent equity, or ready implementability; second, the presence of *leadership*, possibly in the entrepreneurial or intellectual versions, or active participants who are able to pinpoint such solutions and rally support for their realization; and third, *exogenous shocks* that put pressure on policy-makers to provide an agreement. Basically, what Young does is to render more pliable the analytical rigidity and apparent determinism of structural analysis and claim that it is neither sufficient nor necessary.⁸ Instead, he narrows in on ideas (fairness, salience), as well as even less predictable factors such as exogenous shocks or actual behaviour among the negotiating parties. He is not alone in bypassing structural analysis and focusing on process variables in the study of international regime formation. Peter Haas (1990), for instance, claims to show that the evolution of international cooperation on the Mediterranean marine environment stems to a large extent from the growing influence in each state of a transnational *epistemic community*: a network of environmentally oriented experts sharing basic views on the nature of the problems and their cure.⁹ This may sound like a discursive approach. However, of the two constitutive elements of an epistemic community, shared perspective and privileged position within national decision-making apparatuses, the latter is decisive in Haas's argument. By implication, when Haas develops his approach further, he is likely to touch base with a more conventional who-is-allowed-to-decide-and-why discussion.

Young and Haas are both representatives of a *new direction* in the strategist study of international regime formation where interest structure plays a more modest role.¹⁰ Broadly speaking, these theorists are complementary to structural analysis by systematizing relevant factors in the process of *realization* of a theoretically conceived integrative potential, particularly cognitive and ideal factors and sub-national and transnational activity. When pressed, some process theories are inclined to go even further and portray their approach as a more or less independent alternative to structural analysis.

It is not necessary to go that far: instead, one can combine the two strategist approaches by hypothesizing that the process of regime formation will vary fundamentally with the *univocality* of the national preferences involved. Univocality appears when one particular set of interests is predominant in the formulation of national policy on a given issue. If the interests are very clearcut, the international process will probably be *structured* and predictable, and the likelihood of cooper-

ation can be analyzed by straightforward assessments of cost-efficiency, externalities and competition. If, on the other hand, the picture is more complex or diffuse and state decision-makers perceive themselves as either weakly or ambiguously affected by the possible regime, the international negotiations are likely to be *permissive* in the sense of offering more leeway for delegates in international deliberations: government control is less focused.¹¹ There is little reason to expect the parties to a set of negotiations to be symmetric in this respect: in cases where certain key actors¹² have very clearcut preferences, whereas those of others are more diffuse, one will have to analyze the meta-game deciding how the negotiations are structured. Generally, environmental or resource management regimes are not likely to be imposed upon states, so the existence of key actors with univocal preferences requires that the solution is not incompatible with these. By the same token, however, environmental regimes rarely affect core national interests, implying that delegations often do have considerable leeway. This would seem to leave more room in the negotiations for the process factors highlighted above. On its own, however, the process version of strategist theory cannot remove the analytical indeterminacy introduced by weak or ambiguous interests. First, the possible processual factors are many and their relevance must be established in each case. In the universe of solutions, we need some additional guidance about which are likely to stand out as salient or fair. Second, and even more disturbing, while Young focuses on processual factors which may facilitate the realization of an agreement there is an evil twin to his argument. True, the delegate who sees himself as moderately or ambiguously affected by the regime might act constructively to its formation, either by assuming a leadership role or by joining an emergent solution, because a large number of outcomes are acceptable to him. However, he may also react in a manner destructive to a joint solution because he has no urge to reach it. Specifically, he might embrace solutions that are salient and symbolically forceful but also politically untenable: the principle of a common heritage of humanity might exemplify this.¹³ In conclusion, when applied to the question of environmental regimes, the strategist research programme is often faced with a *double indeterminacy*: when interests are weak or ambiguous, the structural version is indeterminate because preferences are hard to ascribe; and the processual version is indeterminate because its scope of factors is so wide and because the direction of their impact is, in principle, open. This theoretical void or indeterminacy is a main reason why strategist theorists might be well served by taking the discursive challenge seriously.

4. The Discursive Challenge

In strategist approaches, the monological actors have fixed and accessible preferences¹⁴ and the analysis of their interaction leaves little room for cognitive factors associated with perception and interpretation or for modification of preferences. In the discursive challenge, cognition, understanding and learning forms the very core. Needless to say, there are important differences in the various clusters of discursive theory of international relations, and Murphy and Tooze (1991) correctly challenge the practice of lumping them together and criticizing them *en bloc*. Categorizations of approaches generally have the unattractive feature of undue simplification and even banalization: they encourage the shrinking of a set of approaches to those elements that are most susceptible to comparison and hence serve to subjugate other elements.¹⁵ It is therefore a sign of a certain insensitivity that I now venture to present a simple typology of discursive theories. Nevertheless, it is very clear that the various discursivists share important traits, the most important one being, as noted, the privileged position of inter-subjectively constituted discourses.

At a general level, discursive approaches are concerned with the way behaviour is related to various forms of knowledge or understandings, established and diffused by means of research, argumentation, conjecture and refutation (Weale, 1992, p. 30).¹⁶ Change is analysed by focusing upon learning and communication. A general definition of discourses, as hinted above, can be approached by considering ensembles of socially constituted ideas, concepts and categories. Two specifications outline the ontological, theoretical and methodological components of the discursive challenge:

- (1) Discourses are loci for the establishment of *inter-subjective understandings*. They are neither solely internal nor solely external to actors but take place in the inter-subjective space linking those two worlds together: what actors seek is always defined within social contexts. At this point a distinction can be made between modern and post-modern versions of discursive theory. The former does not see inter-subjective ontology as threatening the sovereignty of actors or the human ability to identify essences or commonalities (Brown, 1991, p. 1092), and can be exemplified by Habermas's theory of communicative action. In order to understand action, like a response to a proposed international regime, reference must be made to the way it relates to and becomes criticizable within three worlds: the outer ('objective'), inner ('subjective') and social ('inter-subjective') (Habermas, 1984, p. 95). The application on regime formation of this approach is tried out Section 5.

Post-modern discursivists such as Ashley (1989) go one step further and argue that concepts of strategic or monological action are not only insuffi-

cient: they are absurd, because actors are *constituted* by the shifting social discourses in which they engage. Reality is constructed by the discourse itself, rendering identity a problematic concept and in effect precluding any firm foundations of human knowledge. This does not mean that post-modernists are unable to develop propositions about the world; only that they are constantly aware of their historicity, i.e. their arbitrariness, political bias and dependence upon shifting practices (Ashley, 1989, p. 284). A post-modern approach to international relations is applied to the issue of regime formation in Section 7.

- (2) In addition to producing inter-subjective understanding, discourses are *loci for struggle* between various societal groups pursuing conflictual goals. In Gramsci's modernist analysis of social change, the focus rests on the way legitimizing discourses as necessary elements of governance can become exposed and vulnerable to societal mobilization. As we shall see in Section 6, an effort to apply this approach to international regime formation can highlight the disputes and contradictions in a dominant discourse and thus its robustness to alternative interpretations.

Again, post-modern versions shift the focus slightly: discourses are not only loci for struggle, they are expressions of previous struggles and serve to structure activity in certain ways even today. As such, they must be regarded with utmost suspicion. Intellectually rooted in the work of Foucault and Derrida, a main purpose of these approaches is to *expose* the patterns of power, or selective ordering, underlying the practices of specific discourses. As we shall return to in Section 7, the focus rests on why certain complexes of theories, values and practices acquire dominant positions at the expense of other, subjugated knowledges (Keeley, 1990).

5. The Insistence on Inter-subjectivity: Communicative Action and State Behaviour

As noted above, basic to Habermas's concept of action is its embeddedness in a broader conception of rationality, placing the subject squarely within three worlds: inner, social and outer. This ontological difference with the strategists, however, is one of complementarity rather than exclusiveness. Habermas does not deny that humans are able to act strategically, i.e. in a goal-seeking manner towards objectified others, in order to realize a desired condition; the point is rather that their actions *cannot be reduced* to this purpose. There is something more going on which the actor himself cannot avoid or fail to notice: action expresses inner feelings and sentiments; it relates to social norms, either approvingly or rejectingly; and it communicates an understanding of the world. Action is properly seen as *communicative*,

in the sense that humans are enabled and obliged by the medium of language to continuously relate and justify their action by reference to validity criteria in the inner, social and outer worlds; truthfulness, norm-conformity and success respectively.

An immediate reaction on the part of strategist scholars may be that communicative action can be relevant when discussing families or local communities but hardly in the international sphere, where actors are separated by cross-cultural differences and conventional particularism, i.e. the pervasive view that obligations of state leaders go primarily towards their own citizens. While not necessarily refuting this intervention, well-known processes like the dramatic growth and elaboration of international law, the increasing transnationalization of the world economy, the growing transparency produced by worldwide communication networks and the explosive growth of international and transnational fora for inter-personal exchange all seem to suggest that it refers to a difference in degree rather than in kind. I will argue that the discursivist insistence on a broader set of standards towards which actors are believed to relate, including but not confined to purpose or group interest, can actually *support* the contextualization of strategist approaches to international regime formation.

It will be recalled that the effort to combine structural and processual versions of the latter led to a hypothesis that delegates of states with weak or domestically contested interests in the regime change will have greater leeway in the negotiation than those with strong and clear preferences. This, I argued, makes them more prone to be influenced by processual factors like the ones outlined by Young (1989b) or Underdal in this volume. Because processual factors are many and their direction uncertain, however, the indeterminacy of strategist analysis is not removed. By the *norm-guided* model of action, the attention is drawn from purpose to the way actors relate to norms in the social world. This normative context is a distinctive world only to the extent that it is recognized as valid by actors (Habermas, 1984, p. 88), i.e. when the norms are internalized and not just features of the objective world. The fit between the proposed regime norms and the actors' pre-established normative context is then one important justificationary claim the delegates will resort to; and thus, for the analyst to focus upon. This is admittedly a quite trivial statement. Going beyond the existing normative structure, however, Habermas's norm-guided model comprises a motivational theory based on social learning as well as procedure for assessing whether an action or a regime deserves the assent of a circle of others. This 'second fit' to be explored by the analyst is present if the regime ". . . gives expression to generalizable interests of those affected . . ." (Habermas, 1984, p. 89). Still, it could be argued that this insight is already encompassed in strategist approaches to regime formation, e.g. by Young's (1989b) focus on a contractarian situation,¹⁷ and more directly, his sensitization to 'fair' solutions.

More innovatively, the *dramaturgical* model of action shifts the focus from

actor purpose and societal norms to the way actions are representations of one's inner world, such as feelings, wishes, hopes and needs, towards an audience of others (White, 1989, p. 38). More importantly, this representation can be directed at audiences at both domestic and international levels. Thus, it becomes important for the analyst, grappling to overcome the indeterminacy of process relevance, to investigate the kind of dramas being played by the delegate and the various audiences addressed. If the regime proposal touches upon, or may be brought to touch upon, controversial fundamental values, it is very possible that a comparatively disinterested delegate will be inclined to let his role in that drama shape his behaviour in the given negotiations. A common interpretation of the United States' turnabout regarding the adoption of a radical 1991 Environmental Protocol for Antarctica, prohibiting minerals activities for 50 years (Stokke, 1992a), was the fact that media attention and the mobilization of green organizations in the US had rendered the negotiations on Antarctica a *stage* on which the drama 'Human Greed versus the Natural Environment' was being played, clearly delineating the criteria for qualifying as a 'good guy'.¹⁸ This coincided with an urge on the part of the US president to boost his green image, having quite recently suggested that the so-called greenhouse effect may very well be circumscribed by a 'White House effect'. The new dramaturgical setting changed the relative attractiveness of the various solutions and brought about the formation of a new Antarctic sub-regime. Conversely, the delegation of another key Antarctica state, Chile, were under no domestic pressure on this issue,¹⁹ meaning that the dramaturgical aspect of its behaviour was different in nature and probably not as directive as it was for the US delegation.

Thus, when applied to the problem of international regime formation, the dramaturgical model may help identify *solutions* likely to improve chances for agreement and also indicate whether some of the participants are likely to take on *leadership* roles. Not only should the analysis be sensitive to various sources of saliency or apparent equity: it must also be acutely aware of the extent to which various solutions touch upon, either directly or symbolically, values likely to mobilize the weakly or ambiguously affected. If they do, it must be clarified whether these dramas suggest behaviour that is supportive or destructive to the proposed regime. Bringing the point one step further: in *practical* terms it becomes important for an agent contemplating entrepreneurial leadership to be aware of the dramaturgical aspect of action, in order to come up with solutions that are compatible with the roles perceived by the swing-voters. Hence, it is the specific discursive basis of state preferences which make certain solutions appear salient, equitable, or otherwise appealing to negotiators conceived of as social animals. A careful analysis of the normative and dramaturgical context of the negotiations will help remove some of the indeterminacy of strategist analysis.

On the other hand, a discursivist like Habermas relies very heavily on the ability

of language and discourse to give unequivocal prescriptions on human action. Strategic action, which tends to disregard this discourse, is reduced to a limiting case depriving actors of their full rational potentials. As shown above, in this article I explore a softer discursive position by trying to actively combine strategist and discursive insights. According to this position, actors can escape any single discourse by virtue of being engaged in a number of them, each occurring at various political levels and all with their separate knowledge and privileged themes. These discourses may very well generate understandings that dictate highly different policies. Put bluntly, the discourse of unemployment may be politically more compelling than that of acid rain. In this softer or *polyphonic version* of discursivism, the social nature of the discourse and the actor is retained, but the discourses are multiple and not necessarily commensurable. Thus, in order to understand behaviour we must know how actors link various discourses together and how priorities shift between them. It is in order to explore this question I now resort to another component of the discursive challenge to the strategist research programme, its insistence that discourses are loci for societal struggle. While we saw above that an inter-subjective notion of rationality suggests awareness of the normative and dramaturgical context of the negotiations, this second component emphasizes the way certain discourses become politically compelling, hence producing univocal preferences – and how they are overtaken by others.

6. The Insistence on Struggling Discourses: The Generation of State Interests

This is where the analysis of Italian neo-marxist Gramsci becomes relevant.²⁰ His well-known explanation of why revolution did not take place in Western Europe, despite the turmoils of World War I and the economic crisis that followed, leans heavily on the power of discourse, specifically, the *ideological hegemony* of the ruling classes.²¹ As he put it in his prison writings, “. . . in the most advanced States . . . ‘civil society’ has become a very complex structure and one which is resistant to the catastrophic ‘incursions’ of the immediate economic element . . .” (Gramsci, 1971, p. 235). This does not equal discursivism with idealism: the core of Gramsci’s approach is to elaborate on how the power of ideas are linked to material power in society and how they penetrate social institutions to consolidate that power.

Applying this discursive concept, we are able to give social contents to the basic criterion for choosing between structural and processual versions of strategist analysis: the degree of hegemony in key states of one set of political premises or concerns. A *hegemonic situation* is marked by a highly regulated domestic decision-making arena where access criteria are strict. There are two dimensions

to *access structure*. Partly it is a matter of openness to direct participation of interested parties in the decision-making processes; partly it concerns the legitimacy of certain concerns or perspectives in a given issue area. National security comes to mind as an issue area where the access structure is highly restricted, partly because information is secretive and partly because the legitimacy of security concerns is quite high. *Anarchy* would mark the opposite situation where the access structure is very loose and permissive, allowing the participation and influence of any interested party²² and thereby rendering more leeway for entrepreneurial or intellectual leadership. Somewhere in between we might identify a situation of *contended hegemony* where the political decision-making arena is being swarmed by new actors and premises, challenging the perceptions of establishment.

6.1. Environmental Regimes: The Malign Hegemony of Economy and Sovereignty

The particular ideological hegemony faced by those concerned with environmental regimes has two components: the economy pillar and that of sovereignty. A full discussion of this point would require an in-depth analysis and substantiation of the way proponents of economic and sovereignty concerns permeate societal institutions and dominate the political decision-making arenas, delegitimizing at the outset proposals threatening these interests. In this article, suffice it to point out that while it is not inevitable, economic and sovereignty concerns regularly clash with those of the natural environment and *usually prevail*. Concerning economic welfare, the so-called Brundtland Report (UNCED, 1987) tries to resolve the dilemma between growth and environmental concerns by a radical technological optimism, positing high hopes for our ability to produce cleaner and less energy-consuming production units as well as man-made substitutes for scarce raw materials. However, the link between technological innovations and the economic decisions of the most-polluting countries is not straightforward, as the latter sometimes lack both the technological solutions and the purchasing power necessary to acquire it. All in all, it is safe to argue that a clash remains between much publicized concerns for our natural environment and other admirable goals like economic activity or employment needs. A second barrier for regime formation is the general unwillingness of states to accept restrictions on their sovereignty. Because of the linkage in international law between actual exercise of authority and the strengthening of claims to sovereignty, the reluctance to enter into cooperative arrangements is especially acute when national boundaries are unsettled. Following the global introduction of exclusive economic zones, a host of marine boundary disputes are still pending worldwide, adding to the difficulties of forming regimes for the management of marine resources and environments. In strategist terms, the problem arising from the predominance of economic and sovereignty concerns is that, generally,

interdependence relationships in these areas often involve a high degree of incongruity. When activated, they do not lend themselves easily to international cooperation.

6.2. *Praxis: The Discursive Basis of Changing Priorities*

Noting the fact of a hostile hegemony, gramscian discursivism focuses on the ties between the material power structure and the construction and reconstruction of ideas. This is reflected in its theory of social change. Rather than a Leninist attack on the state, Gramsci (1971, p. 258) advocates a shrewd long-term siege and ultimate occupation of the institutions that interpret and diffuse ideas and values in society: schools, media, bureaucracies, courts, churches etc. His discursivism stresses the dialectical nature of an existing hegemony: it is not only an instrument of the ruling class but also an enabling structure by which consciousness is raised (Mouffe, 1979, p. 196)²³ – an ideological hegemony is pregnant with its own dissolution. Intimately related to this is the necessity to gain control over hegemonic apparatuses. This is accomplished through the successful construction of a *historic bloc*. There are various definitions of this bloc but most of them articulate²⁴ the concepts of social force and coalition.

Thus, a Gramscian analysis of regime formation must proceed in three steps: what is the robustness of the ruling hegemonic ideas to competing political utilization; what is the robustness of the political institutions to counter-hegemonic agents; and what is the political potential for organizing and maintaining a counter-coalition or historic bloc? The following is a sketch, illustrative only, of an approach requiring extensive elaboration in order to be fully satisfactory.

6.2.1. Robustness of Hegemonic Ideas. Regarding the enabling nature of even a hostile ideological hegemony, both the concerns for economic growth and for state sovereignty have recently shown themselves to be amendable to new political interpretations. Both draw their force from ideas related to human welfare. As the concept of sustainable development shows, however, and as managers of marine living resources have known for centuries, the link between sovereign decisions on economic exploitation and long-term welfare is a problematic one. On one dimension, this refers to much studied problems of collective action, such as free-rider incentives and supply deficits, upgrading the role of international commitments. On another, it refers to the way current utilization patterns are discursively linked to future welfare. We must keep in mind why the no-growth society has failed as a political vision in the Western world: economic values, especially consumptionism, still prevail. The concept of sustainable development is far more forceful on this account because it encompasses effectiveness as well as caring. In eco-feminist

terminology, it poses as an androgenous concept, but as the growth element clearly predominates over the environmentalist it leans towards the male. There is no reason to be sanguine about the implications for global development strategies of the diffusion of the sustainable development concept. It does, however, demonstrate that the ideological basis for the dominant concerns in the politics of key states might be and actually is being mobilized by agents opting for change.

6.2.2. Robustness of Hegemonic Institutions. In the environmental policy arena, an increasingly active and self-assertive player has appeared in the past few decades. The traditional predominance of industrial and sovereignty concerns is in decline, as green non-governmental organization *challenge* the legitimacy of state authorities on these decisions. This is an old phenomenon but one that is growing in terms of membership, professionalism, and international coordination. In general, green NGOs serve to heighten public awareness, at home and abroad, about the environmental performance of the various states. Traditionally operating outside the regular political channels, some of them are now opting for integration in the corporative decision-making system in each state. The immediate effect of this new trend is that regular political organizations have adopted environmental issues themselves, partly to regain the initiative in the process and partly to win votes. As green issues will influence the competition for office, it is necessary to appear willing and able to deal effectively with environmental threats.

As noted, the focus on NGOs links up to Gramsci's assertion that the wise revolutionary in advanced societies resorts to gradualist strategies. Attainment of power is not a frontal attack on the state apparatus but a result of a *long war of position*, involving the gradual occupation of societal positions diffusing hegemonic ideas. Important here is the contention of definitions of national interests in the relevant political issues. The significance of this to environmental politics is quite clear: the indirect strategy of the environmental movement aiming at changing policies by affecting attitudes in the population at large. It is important to note, however, that a number of NGOs feed on the contrastive strategy of highly visible, direct actions aiming at immediate results on discrete decisions.

6.2.3. Potential For Coalition-building. Environmentalists can assemble a quite broad coalition against the prevailing hegemony: green NGOs; newly converted industrialists swarming the growing market for clean technologies and purification systems; in many instances, scientists;²⁵ and local inhabitants directly affected by environmental degradation. However, the potential green bloc in Western states is loose, heterogeneous and *fragile*. The various participants are allied not around firm and explicit belief systems but rather around loose story lines (Hajer, 1992) such as 'I believe the world should be seen as a whole', 'sustainable development', or for those inclined towards science fiction, 'in the world spaceship we

had better locate the control panel'. The unity of these story lines easily breaks up as soon as they are rendered concrete in political issues. This is a basic weakness. In gramscian discursive terms, the green bloc lacks leadership and, until leadership emerges, this counterforce will easily be outmaneuvered by the establishment by hegemonic suppression (ridicule, coercion) or cooptation. On the other hand, and less dogmatic, in the economic area, hegemonic stability theorists have been able to point out the possibilities of joint leadership,²⁶ which incidentally is also more in line with the horizontalist ideology of a majority of the green NGOs.

This discussion has tried to bring out how a Gramscian approach can shed light on the discursive power struggles which define the *univocality*, *contents* and *stability* of state preferences – in turn affecting the preferred analytical strategy and, in the structured case, the malignity of the problem of forming international environmental regimes. A basic difference between Gramsci and our next group of discursivists, the post-modern ones, is that while the former regards discursive sensitivity as a means of substituting one type of hegemony for another, post-modernists remain suspicious to *any* ruling discourse (Keeley, 1990, p. 93).

7. The Insistence on Exposure: A Role for Deconstruction?

Post-modernists such as Richard Ashley are likely to be highly critical of any fixed explanation of why international regimes emerge: by problematizing the sovereign identity of the analyst, they question the basis for establishing stable knowledge. Indeed, Ashley (1989, pp. 274, 318) tends to regard any explanation as evidence of a cowardly flight from the 'cartesian anxiety', i.e. the disturbing sensation that there is no rock bottom on which validity claims can be based (George and Campbell, 1990, p. 289). This cowardice, according to Ashley, is reflected by the invocation of some arbitrary ordering principle highlighting certain possibilities and obscuring others; importantly, it reflects and produces power. By consequence, the post-modernist is obliged to be constantly on the road, always seeking out new positions from which to challenge the ruling interpretation. That is why some have coined post-modernists as 'nomads'; not altogether fitting since nomads move between fixed positions whereas post-modernists have committed themselves to breaking every fixation. This may be why the currently preferred allegory among post-modern theorists of international relations is not 'nomads' but 'exiles' (Ashley and Walker, 1990).

7.1. *Deconstruction*

The purpose of post-modernism is to demystify explanatory efforts, exposing knowledges which are obscured or subjugated to others. It seeks to disclose undetected

possibilities and hidden power. This is *deconstruction* of theory. A key method elaborated by Derrida (Gregory, 1989, p. xv) and advocated by Ashley is to reverse the '*logocentric procedure*' by which the modernist scholar has established order. This amounts to undoing his tendency to conceive of phenomena in terms of logical opposites of which one is clearly favoured: order over chaos, male over female, culture over nature, or international over domestic (Ashley, 1989, p. 261). The reversal of the logocentric procedure means opening up the space between logical opposites and considering the possibilities thus disclosed. Applied to the problem of 'international regime formation', the deconstruction could take the following form:

- (1) When *international* overrules domestic, the range of processes taking place at sub- and transnational levels are shoved into the background. There is tyranny of the state involved here, leaving crucial processes in the dark. As pointed out by Keohane and Nye (1987), its silence about domestic processes has turned out to be a major weakness of mainstream regime theory. Also, the analysis of *access structures* proposed above can clearly be stimulated by opening the space between international and domestic. While generally durable phenomena, access structures will always have some degree of fluidity: an important dynamic aspect is the interactions between international, transnational and sub-national processes. Certain domestic actors are being empowered by virtue of their relevance to the regime in question. Sub-segments of the state bureaucracy often hold different views on international regime initiatives, and the mobilization of societal NGOs can be relevant in domestic bureaucratic infighting. Moreover, as suggested by the concept of epistemic community, transnational alignments may be relevant here: their participation in cooperative networks with sister organizations in other countries can increase the influence of NGOs on public decision-makers by boosting their expertise, prestige, external influence and hence their standing in the domestic process.
- (2) *Regime formation*: as Susan Strange (1983) pointed out at an early stage, the focus on regimes as something to be sought and valued distracts the attention from its negative impacts. Following the deconstructionist procedure of opening up the space and reversing the hierarchies, not only is it a futile exercise to seek regime determinants (because of the fundamental fluidity in the world); it may be ethically questionable as well. The international regimes may embody and strengthen power in an unpalatable way. Internationally, they may serve to suppress some actors to the benefit of those initially defining its substantive contents: they embody another set of constraints in a world of asymmetric power relationships. Arguably, these questions are silenced or at least easily ignored by an unreflective focus on regime formation.

These blind spots or closing of agendas potentially fruitful for the understanding of regime formation can be identified at the outset by the deconstructionist method. While it will not be pursued here, this mode of critical analysis can be applied not only to the *task* of understanding regime formation but also to the various theoretical *approaches* to it.

Thus, post-modern discursivists are excellent critics by always forwarding the *meta-question*: why is this kind of explanation favoured at the cost of others, and what does this say about power in society? However, they are destined by their ontology to leave it there. If a post-modernist such as Ashley tries to apply this knowledge to given problems he enters a forbidden area, partly because this would be at the expense of other explanations and partly because the view from which the meta-question originated is likely to have been dissolved or overtaken by new interpretations. This is the fate of homeless exiles, the cost of always being on the move. The benefits are equally notable: post-modernists are always able to reopen an issue that others, maybe mistakenly, have closed, and they incessantly expand the intellectual agenda. Living on the borderline, constantly on the move, they know countless stories but none of them sticks. Let us see if they still can be useful to others who are more interested in understanding how international regimes come about than in what they may tell us about power in society.

7.2. *The Reductionist Road to Compatibility: From Exile to Tourist*

If we take Ashley's position seriously, we would not be striving to cast a plausible story of what produced an international regime. Such a story aims at what a post-modernist abhors: a freezing of our understanding of social reality. However, there is nothing to preclude those less persuaded of the volatility of identities and less fearful of invariances from taking advantage of post-modernist insights in building understandings of social phenomena. Post-modernist *methodology* can be applied in order to open up the horizon of analysis and sensitize the analyst to the hidden possibilities in the field under scrutiny. Admittedly, this is a reduction of post-modernism to its deconstructionist methodology. It amounts to exchanging the exile allegory of post-modernists with that of a *back-pack tourist*. Loaded with prejudices and early closures, back-packers nevertheless cross borders and dive into new societies with charming naivety, often loosely based in some rejection of the values of their home country. Less-than-perfect understanding of the language is compensated by a genuine openness to the ways and ideas of the locals and a willingness, if only for the sake of conversation, to contrast them with those of their own country. More importantly, however, they return home. Of their exciting and stimulating experiences abroad, some stick with them while others are rejected. In short, the back-packer is a modern figure, wised up by post-modernism.

8. Conclusion

Acutely aware of its selective nature, this paper has portrayed the discursive challenge to mainstream strategist accounts of international regime formation by focusing upon its ontological, theoretical and methodological components.

Ontologically, discursive theory bluntly rejects the monological concept of actors implied in strategist analysis. In the view of a modernist like Habermas, it serves to suppress the fact that actors continuously relate to other standards than their stated purpose. The *theoretical* implication of this challenge is to complement the strategic model with that of norm-driven and dramaturgical action. Social change, such as the formation of international regimes, is stimulated by new knowledge arrived at by research and arguments continuously scrutinized in terms of truthfulness, norm-conformity and contribution to purposive success. Equally concerned with the political relevance of ideas and images but less convinced of their directive nature, gramscian discursivists shift the focus from processes of understanding towards those of persuasion. Identifying discursive barriers to social change, they show how political mobilization must undermine certain dominant understandings by targeting their legitimizing ideas and institutions. Post-modern discursivists are equally scornful about the strategist conception of actors with stable interests unaffected by the inter-subjective discourses in which they find themselves. However, they go one step further than the modern discursivists in questioning the sovereignty of man, i.e. his very existence outside the shifting practices of the discourse. The *methodological* implication of this is to view fixed theories and concepts with suspicion or even disgust, as arbitrary efforts to create order and invariance out of the lack of it. Instead, important insight can be gathered by deconstructing established knowledge and perspectives.

This article has tried to show that much of the criticism forwarded by discursivist authors can be *combined* with more established, strategist efforts to cope with the study of international regime formation. Indeed, I have argued that basic discursivist insights may actually strengthen the latter by reducing some of its theoretical *indeterminacy*. As noted, a double indeterminacy can be involved in strategist analysis. When interests are weak or ambiguous, the structural version needs guidance on the ascription of preferences; and while we have argued that this probably renders the processual version more relevant, the latter's scope of factors is very wide and the direction of their impact unclear. Discursive theory can reduce these problems by focusing upon fields left in the dark by strategist theory, especially processes of justification and legitimation and the role of knowledge, arguments and disputes in shaping and modifying state priorities. The compatibility, as has been seen, is especially important for the modern versions of discursivism. However, I have tried to show that even Ashley's post-modernism

can be useful to analysis not sharing his rejection of the basis for knowledge about the world, by increasing the sensitivity to analytical possibilities subjugated by professional vocabulary or vocational training.

Notes

- ¹ I am grateful for constructive comments from Dag Harald Claes, Helga Nowotny, Tore Nyhamar, Bent Sofus Tranø, Arild Underdal, Davor Vidas and Albert Weale.
- ² The concept is dealt with in some greater depth in Section 4.
- ³ Typically, when Ashley (1989, p. 320) bothers to comment on the latter, it happens in a footnote.
- ⁴ The crucial linkage between regime formation and environmental protection is the *effectiveness* of the regime. This paper will not discuss this issue which is climbing rapidly on the research agenda of regime theorists. However, contributions on effectiveness are found in Wettstad and Andresen (1991), Young (1991), and Underdal (1991). An early statement is found in Jacobson and Kay (1983).
- ⁵ Let me stress at the outset that the strategic conception of action encompasses situations when the environment is parametrical, as in neo-classical economics, as well as those when it is composed of goal-seeking others, as in game theory; the former is a limiting case of the latter.
- ⁶ See for instance Underdal (1984) or Chapter VI in this volume.
- ⁷ Externalities denotes effects on others of actor's behavior not included in his cost-benefit calculus. If competition is present, these effects are included in his calculus, but in an inverted form (Underdal, 1987, p. 171).
- ⁸ It is insufficient because strategist analysis is often indeterminate and because it glosses over the problem of realization; and unnecessary because players very often manage to cut deals despite the fact of very malign problems.
- ⁹ *International Organization* 46(1) (1992), with Haas as special editor, is devoted to a broad application of the epistemic community concept.
- ¹⁰ While to some extent bashing conventional wisdom in international relations theory, both Oran Young and Peter Haas are squarely within a positivist tradition by seeking generalized and testable hypotheses.
- ¹¹ Consider an alternative hypothesis: a domestically contended issue area will be followed keenly by interested parties, and any deviation from stated policy will be ferociously attacked. However, we are discussing a situation when stated policy is in flux.
- ¹² Key actors are loosely defined here as those actors who must join the regime in order to make it politically relevant.
- ¹³ While definitely salient and also with an apparent ring of equity about it, the role this principle has in the contentious Part XI of the 1982 United Nations law of the Sea Convention makes states opposing Part XI quite cautious about embracing it in other contexts.
- ¹⁴ Often by reference to their position in the geographic, economic, or political structure (see e.g. Sprintz and Vaahtoranti in this volume); sometimes by reference to explicit statements of goals, especially if corroborated by actions.
- ¹⁵ As I will return to in Section 7, the subjugation of knowledge is a key message of post-modernist discursivists, who currently lead on in the attack on mainstream international relations theory.
- ¹⁶ Literally, the word discourse means 'running back and forth'.
- ¹⁷ I.e. a situation similar to the Rawlsian 'original state' where the actors do not know what role they will be given in the society the rules of which they shall decide.
- ¹⁸ It should be noted here that Antarctic politics exhibit exactly the structural traits in which process variables are assumed to be important: quite low economic yield and close to no strategic value. The role of the media and societal mobilization in shifting the US position on the Protocol is discussed in Joyner (1992).

- ¹⁹ Francisco Orrego Vicuña, advisor to the Chilean delegation, at a conference at the Fridtjof Nansen Institute, 7 May 1992.
- ²⁰ I do not claim any particular originality for making this linkage. On the contrary, Gramsci is very much *en vogue* today among political scientists, also those working at an international level (Cox, 1983, 1987; Young, 1991). With the kind permission of the publisher, Sections 6.1 and 6.2 draw on Stokke (1992b).
- ²¹ Let me, for the sake of good order, emphasize that Gramsci's concept of hegemony is far broader than that applied by the theorists of hegemonic stability (e.g. Kindleberger). The latter is largely confined to structural capabilities.
- ²² The work of March and Olsen (1976) on what they came to term the Garbage Can model comes to mind when explicating these processes.
- ²³ This is a central string of thought in the so-called structuration school (e.g. Giddens, 1984). For an application to international regimes theory, see Dessler (1989).
- ²⁴ I.e. study their mutually modifying interaction.
- ²⁵ The relationship between science and environmental politics is complicated. In many instances, however, scientific cooperation has been an important predecessor for policy coordination in the environmental area.
- ²⁶ Note, however, again that their concept is far narrower than Gramsci's.

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VIII. Domesticating International Commitments: Linking National and International Decision-Making

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1. The Changing Agenda of International Politics

1.1. *Internationalization of Domestic Policy Issues*

To an increasing extent governments all over the world are being called upon to work out and implement joint solutions to collective policy problems – ranging from the illegal production and distribution of drugs to global climate change. At least two propositions have been offered to account for the proliferation of international policy problems. One attributes this development to increases in the volume and ‘intensity’ of communication, transactions and exchanges of externalities across borders. The underlying assumption behind this line of explanation is that, other things being equal, the higher the volume of interaction between two societies, the more sensitive and vulnerable they tend to become towards each other (Keohane and Nye, 1977, 8 f). And the greater the interdependence between two actors, the more each of them will care about what the other does. An alternative proposition focuses on changes in the role of government, the basic argument being that as the scope of government intervention into society expands – as it has done throughout most of this century – new problems have been drawn into the sphere of public policy. To the extent that these problems have international ramifications, they may in turn also become topics of intergovernmental negotiations. The driving force, according to this hypothesis, is the expanding role of government in economic activities and social life rather than changes in the level or scope of interdependence among societies (Morse, 1973; Sundelius, 1984).

The relative ‘explanatory power’ of each of these propositions need not concern us here. In general, it seems a safe conclusion that there is some merit in both.¹ In some issue areas, environmental management being one obvious case, both mechanisms are clearly at work. The volume of transboundary pollution and the rate of exploitation of global commons has been increasing since the times of the industrial revolution. Moreover, the opportunity costs of unilateral pollution abatement

efforts have increased as a consequence of the introduction of more liberal rules for international trade and investment. In an open economy unilateral pollution control measures tend to impose additional costs on the domestic industries to which the stricter rules apply, thereby weakening the competitive edge of these industries.² The indirect costs suffered as a consequence may well exceed the direct abatement costs. At the same time, there can be no doubt that governments, at least in the Western part of the world, by and large intervene more actively in order to preserve environmental quality now than they did only three or four decades ago. Public concern over environmental degradation has grown significantly (although by no means steadily) during this period, and most governments have responded by introducing new and more ambitious legislation and by strengthening their institutional capacity for managing environmental resources.

Our main concern here is, however, not the causes of this proliferation of international policy problems, but rather the kind of political processes and management problems that such issues generate at the domestic level in the area of environmental policy. In particular, we are interested in the way in which the international dimensions of environmental management penetrate domestic society and politics, and how these processes within the nation state feed back upon the operation and further development of international agreements and institutions.

In this regard, international action on environmental problems is a good candidate for an examination of the way in which domestic and international factors interact in the foreign policy of a country. As noted above, effective responses to increasingly serious environmental problems require the collaboration, even joint action, among nation states at the international level. At the same time, however, the nature of these problems ensures that international action to deal with these issues will have serious consequences for, and therefore directly involve, important elements of domestic society in the different phases of the policy process.

The environmental problems which are the object of international action are generated as side effects of otherwise socially beneficial activities. Efforts to change patterns of production and consumption behavior within nation states by means of international regulation require measures aimed at these primary activities, thereby mobilizing societal and governmental actors in reaction to the actions taken. In this sense, international action on environmental problems penetrates domestic society more directly and deeply than is the case with more traditional issues of foreign policy. This means that an analysis of cooperation at the international level must also examine institutions and processes through which these domestic actors and interests take part in the negotiation and execution of international environmental agreements.

The 'implementation game' has more often than not been neglected in studies of international cooperation, or analyzed only in terms of factors encouraging or curbing defections from the agreements entered into. It is, however, important to

keep in mind that the policy process does not end with the signing of an international agreement or convention; nor can their implementation be reduced to a matter of ‘compliance’ in the narrow sense this problem is usually discussed in the literature. On the contrary, it is a complex political process that deserves attention in its own right. And here it seems useful to apply insights drawn from the general study of policy implementation to the analysis of the execution of agreements reached at the international level.

Our examination of the processes and structures through which national policies are formed is based upon two basic assumptions. First, we assume that ‘issues determine politics’, which means that the character of the policy-making process depends on the nature and structure of the issue. Second, we also subscribe to the assumption that, in turn, ‘politics determine policy’. More specifically, we suggest that what comes out of a decision-making process will depend on, *inter alia*, *who* are involved and *how* decisions are made. Taken together, these assumptions suggest a particular sequence of tasks to be addressed, the first of which is to determine more specifically what characterizes the kind of international problems with which we are concerned here.

2. ‘Issues Determine Politics’

2.1. *The ‘New’ Problems*

Our point of departure is the assumption that the ‘new’ concerns tend to differ in important respects from those that have traditionally been considered quintessential ‘foreign policy’ issues. Suffice it here to compare the two sets of problems in terms of two dimensions, viz. the kind of substantive competence required to deal with them, and their impact on society.

Clearly, the ‘new’ complex interdependence concerns call for technical competence in a wide range of areas that have never been considered part of the ‘organizational essence’ of ministries of foreign affairs (MFAs). Most MFAs have responded by making some efforts to build up ‘in-house’ expertise, but even those that pursue this strategy most vigorously can hardly avoid having to share the field with other, specialized agencies and relying heavily on their inputs. The general picture, at least in democratic political systems, is one of increasing differentiation of responsibility for managing external relations.³ Most ‘domestic’ ministries and agencies now play a key role in dealing with international problems in their particular field, and they have prepared themselves for this role by, *inter alia*, building up institutional capacity (often in the form of specialized offices or even departments) for participating in the relevant international decision-making processes.

Secondly, most of these ‘new’ problems and their potential solutions affect

societies or segments of societies in ways that make them defy categorization as ‘domestic’ or ‘foreign’ policy; they typically have domestic as well as external ramifications. Moreover, while the quintessential foreign policy issue is one referring to ‘national interests’ and *state* behavior, many of the ‘new’ problems added to the agenda in recent decades are of particular salience to some *subgroup* or segment of society, and their solutions often involve regulation of corporate behavior or even the behavior of individual *citizens*. Referring to the issue typology suggested by Goldmann (1985, p. 27 f), we may say that these problems tend to be (a) ‘non-remote’ in the sense that at some point some segment(s) of society will see them as directly relevant to their private concerns, and (b) hard to relate to traditional notions of ‘supreme (national) interest’. Yet they are (c) subject to international negotiations and the logic of diplomacy. They typically involve governments in some kind of two-front or two-level bargaining (Walton and McKersie, 1965; Putnam, 1988); promoting the interests of domestic clients *vis-à-vis* other governments, and persuading domestic clients and their organizations to reconsider at least some of their parochial interests in the context of some broader notion of the ‘common good’. And testimonies from practitioners themselves strongly indicate that the former is not necessarily the more demanding task (see e.g. Winham, 1979).

It would, however, be a grave mistake to describe the ‘new’ problems as a homogenous set of issues; they clearly differ significantly – not only in terms of the kind of technical competence required to deal with them, but also with regard to the scope, depth and symmetry of their impact on society. Some problems can for all practical purposes be considered ‘internal’ to one particular system of activities. Managing traffic in the European air space or establishing procedures for the mutual recognition of professional certificates are two examples. In both these cases problems of international coordination arise as functional ‘needs’ internal to the systems concerned, and the choice of solutions seems to have few significant ramifications outside these systems themselves. Other problems, including some of the most intriguing challenges facing governments today, are far more pervasive and complex in terms of societal impact. The problem of (global) environmental degradation is a case in point. Damage to the environment typically occurs as a *side-effect* of perfectly legitimate activities undertaken for other purposes, such as the production and consumption of energy and goods. A policy designed to protect the environment cannot therefore be neatly compartmentalized and just *added* to other policy commitments; in order to succeed it will have to *penetrate* and modify those activities and policies that cause environmental damage in the first place. Paraphrasing the late AFL-CIO President George Meany, we may say that environmental policy in many cases will be ‘too damned important’ to be left to the Ministry of the Environment. At the same time, the societal impact of environmental policies will often be differential in the sense that costs and/or benefits will be unevenly distributed throughout society.

The impact on society varies not only ‘horizontally’, i.e. across issues at the same policy level, but also ‘vertically’, i.e. as one moves from general ‘macro’-goals and principles to specific ‘micro-deeds’. In this paper we shall be concerned primarily with the vertical aspect. The policy-making process typically runs through a number of more or less overlapping stages. One is that of problem identification and diagnosis. This phase begins with a recognition that something is ‘wrong’, and ends with a more or less accurate diagnosis enabling decision-makers to determine the ‘malignancy’ of the problem as well as its causes. Such a diagnosis serves as a basis for developing a ‘cure’. The search for solutions may start with the development and adoption of some more or less diffuse policy goals and principles. At the international level, this process may lead to some kind of framework convention. Such a convention most often has to be supplemented by more specific rules, regulations or other kinds of arrangements (often formally adopted through protocols). Finally comes the task of implementing international commitments through a set of domestic policy measures. The important point to be made here is that the ‘problem’ itself is likely to be redefined as it moves through these stages. For example, what starts out as a ‘grand design’ to prevent or control global climate change will at some point become more mundane matters of, *inter alia*, energy pricing and restructuring of specific industries. And as ‘the problem’ itself is specified and redefined, the policy ‘game’ it generates is likely to change in important respects.

Let us now explore *how*.

2.2. How Problem Structure Shapes the ‘Game’

Our general argument is that the set of actors, the configuration of preferences, and the choice of decision-making arena(s) all depend upon the structure of the problem. We cannot in this paper consider the full range of implications of this argument. Suffice it here to explore the significance of two aspects of problem structure, viz. the *scope* and *symmetry* of domestic impact.

Two *ceteris paribus* assumptions determine the general thrust of the argument: (A₁), as subgroup concentration of the issue salience increases, the involvement of sector agencies and interest organizations (the ‘organizational-corporate channel’) tends to increase, while the roles of the MFA, and to some extent also Parliament and political parties tend to decline. (A₂), the less symmetrical the impact of a problem on society, the more domestic conflict it is likely to generate. Conflict tends to activate a larger number and a broader range of actors, and – since conflict tends to generate its own stakes – also to move issues upwards, to higher levels in organizational hierarchies. The general picture derived from these assumptions is crudely summarized in Table 1 (cf. Underdal, 1979).

Table 1. Hypothesized decision-making processes for six categories of issues

		Scope of domestic impact		
		Nation	Subgroups	Subgroup
Symmetry of domestic impact	High	Bureaucratic	Bureaucratic or org.-corp.	Bureaucratic or org.-corp.
	Low	Numerical	Numerical	Org.-corp., leaning to numerical

We are not in position here to substantiate these assumptions with conclusive empirical evidence. To indicate that they are not based on pure conjecture, we would, though, like to take a brief look at one particular events data file that includes information about at least some of the relevant variables (see note 3).

As far as this small piece of evidence goes, the support for A₁ seems fairly strong: while the Ministry of Foreign Affairs is involved in 45% of all events categorized as dealing essentially with 'national' issues and in 23% of events affecting primarily one group or segment of society, the corresponding figures for ministries and agencies managing one particular section of the economy are 2% and 29% respectively, and for business and labor NGOs 1% vs. 34%. What might be called the 'domestic scope coefficient', defined as [national issues – subgroup(s) issues/all issues], is 0.68 for the MFA and -0.18 for sector ministries (0.12 for all 'domestic' ministries/agencies taken together). Now, much of this difference is due to the fact that the MFA is deeply involved in matters of national security and status, while 'domestic' agencies focus largely on economic and social problems. The latter are clearly more likely to be of direct relevance to private interests. Yet, even when we control for substantive problem-area and some other issue characteristics, 'domestic' agencies (particularly those managing one particular sector of the economy) as well as business and labor organizations tend to play a significantly larger role in events salient primarily to some subgroup(s) than in issues of 'national' significance.⁴ For political parties the bivariate relationship conforms to our expectations, but the effect is not significant in a multivariate analysis. When it comes to the Storting (Parliament), our model accounts for virtually nothing of the variance observed ($R^2 = 0.04$), indicating that the role of Parliament is defined essentially in terms of other dimensions.

Our data file has less to say about A₂. We may note, though, that conflict indeed seems to be a major factor in determining the involvement of political parties, 'idealistic' NGOs, and ad hoc campaigns in international affairs,⁵ but – interestingly, – *not* for business and labor NGOs (if anything, the latter seem to thrive slightly better in 'calm waters').

Previously we also suggested a third assumption, (A_3), which is equally central to our argument in this paper: the more specific the policy measure that comes up for decision, the more determinate and differential tends to be its impact on society. Our events data file does not permit us to follow issues as they move from the level of ‘macro-policy’ to that of ‘micro-decisions’. Some indirect support can be found, however; thus, we may observe that policy specificity is indeed positively correlated with salience to some particular subgroup(s) (Pearson $r = 0.02$), and the correlation also remains significant ($p < 0.01$) when we control for issue-area ($\beta = 0.16$). It also seems that the more specific the policy decision, the more likely that it will affect different interests or segments of society in opposite directions ($\beta = 0.11$).

As we made clear at the outset, these small pieces of supporting evidence can by no means be considered conclusive. We do think, however, that the three assumptions examined above are all sufficiently plausible to warrant a closer look at some of their implications for international cooperation.

Consider, for purposes of illustration, the kind of predictions we would make about the ongoing process of developing a joint program for controlling anthropogenic sources of global climate change. In the initial stages, we would expect discussions to focus on the development of a consensual problem ‘diagnosis’ (as has indeed been the case; cf. the IPCC process). A first aim is to reach a common understanding that ‘something will have to be done’. Possible ‘cures’ will at this stage be described in rather general terms, and the domestic impact of the emerging alternatives will still be hard to determine. Environmental ministries and agencies are likely to take the lead in this phase. As formal international negotiations get under way, a broader range of ministries and agencies will be brought in to consider alternative options, and the MFA is likely to play an important role in *conducting* the negotiations. As the process proceeds beyond the level of a framework convention, attention will shift towards more specific policy measures. The societal impact of these measures will be more determinate and differential. By now, at least, specialized ‘domestic’ branches of government will see the problem as having important ramifications within their particular domains as well, and their ‘clients’ will have discovered that their own private interests may be substantially affected. In response, ‘domestic’ agencies and interest organizations are likely to claim a more substantial role in the policy-making process. And such claims may be perfectly legitimate; after all, the kind of policy measures in question penetrate deeply into their domains, and should normally have been largely a matter for them to decide. By the time we come to the implementation stage, ‘domestic’ agencies may succeed in ‘taking over’ much of the ‘action’ – particularly if significant changes in ‘their’ systems of activities are called for. Along the way, the ‘problem’ itself is likely to be redefined (and the redefinition of the issue and the ‘take-over’ by ‘domestic’ agencies tend to reinforce each other). Thus, what started out as a ‘grand design’

to control anthropogenic sources of global climate change may now be treated largely as matters of, *inter alia*, energy pricing and industrial restructuring. And from the latter perspective things may certainly look quite different.

3. ‘Politics Determine Policies’

Let us now try to translate the latter argument into a more precise, analytical form. For this purpose we need to introduce two additional assumptions. One of these (A_4) is best known through the aphorism, ‘where you stand depends on where you sit’ (Allison, 1971, p. 176). In other words, we shall assume that different actors tend to bring different perspectives and decision criteria to bear on a policy problem, and that these perspectives to a large extent are shaped by formal role (for government agencies) or by ‘structural’ position (for non-governmental actors). Second, we assume that in balancing costs and benefits, different types of political processes tend to introduce different kinds of ‘biases’. Other things being equal, we would thus expect the organizational-corporate kind of processes to give extra weight to consequences that are ‘concentrated’ to one particular sector of the economy or segment of society, while ‘numerical’ policy-making processes – particularly those that mobilize the public – tend to shift the balance in favor of consequences that are felt widely throughout society, possibly also those that pertain to the nation or the state as such (A_5). Referring to Table 2, we would expect organizational-corporate processes to produce ‘too little’ of the kind of policies found in cell 1, and ‘too much’ of the kind of policy measures that belong to cell 4. Processes characterized by strong mobilization and ‘numerical’ patterns of preference aggregation can be expected to tilt the balance in the opposite direction.⁶

If the process of developing policies for controlling human inputs to global climate change follows the path that we have indicated above, the focus will gradually shift from the kind of general ‘macro-formulas’ found in cell 2 towards specific options for action – most of which will, at least in this case, be found in cell 1. All else being equal, these are the kind of policy measures that are least likely to be adopted and implemented – unless the issue takes on symbolic significance and

Table 2. Policies distinguished according to the distribution of costs and benefits (based on Wilson, 1973).

		Costs	
		Concentrated	Distributed
Benefits	Distributed	1	2
	Concentrated	3	4

become the subject of strong political mobilization. The prospects for ‘positive’ action are further impaired by the fact that the cost-benefit calculus will be characterized by other asymmetries as well: the *costs* of environmental protection tend to be certain, immediate, and concentrated to specific sectors of the economy, while the *benefits* will appear, by comparison, to be diffuse, uncertain, collective, and something that can be harvested only in a more or less distant future. Other things being equal, we would certainly expect the former kind of policy consequences to generate more political ‘energy’ than the latter.

What all this amounts to is the proposition that at least for certain kinds of (international) problems there is a real risk that the decision-making process will lead to what might be called *vertical disintegration of policy* (Underdal, 1979, p. 7), i.e. a state of affairs where the aggregate thrust of ‘micro-decisions’ deviates more or less substantially from what higher-order policy goals and ‘doctrines’ would seem to require. A closer look at the process of *implementing* international agreements may help us understand better at least some of the political mechanisms that might be at work.

4. Implementing International Environmental Agreements

4.1. Closing the ‘Implementation Gap’: Beyond Compliance

The conclusion of international environmental agreements (IEAs) – or the establishment of an international regime for dealing with a particular environmental problem – is an intentional act by actors concerned with changing an undesirable state of affairs or preventing such a situation from arising in the first place. International environmental agreements are designed to have an effect on different categories of (societal) activities which are negatively affecting the quality of the environment. The effectiveness of these accords depends heavily upon the actions taken by the states participating in an IEA to effect these behavioral changes *within* their societies.

The importance of these kinds of implementing activities is both a basic fact of life and a sorely neglected aspect of the analysis of international cooperation. Given how self-evident it appears that the proof of the international pudding will be in the national and sub-national ‘eating’, it is amazing how little is known about how the substantive and procedural duties laid out in IEAs are carried out by the contracting parties.

In part, this relative neglect can be attributed to the fact that traditional foreign policy and security issues did not raise the same kinds of questions regarding the execution of international agreements. The behavioral prescriptions or proscriptions such treaties contained were addressed in the first instance to the *state* itself

(i.e. to the national government) – and, in terms of the domestic forces involved, to a limited set of actors (even though the issues themselves could be of great importance to the society as a whole). International environmental problems and the agreements drawn to deal with them tend to penetrate societies in a more pervasive and direct way, and carry potentially high costs for important interests, such as producers and/or consumers of particular goods and services.

A second reason for the lack of attention to the implementation of IEAs seems to be a misconception of what implementation is all about. A good deal of discussion in the literature about what happens after the agreement is signed focuses on the incentives that national governments have to comply with or defect from their international obligations. The problem is typically conceived of in terms of compliance and enforcement in a decentralized ('anarchical') system (see e.g. Mohr, 1990), and the practical purpose of the analysis is most often to find ways of designing cooperative arrangements so that incentives to defect are removed or effectively curbed. These are no doubt important aspects of the 'post-agreement' phase, and such a conception of the process may arguably be more adequate when considering some of the traditional 'high politics' issues related to security and status. Such issues are, as we have pointed out, the primary responsibility of the national government, and the actions that must be taken to comply with international commitments are more or less directly under its control. But even for such issues conceiving of implementation in terms of unitary (rational) actors pondering whether or not to 'defect', would lead us to ignore important aspects of the political 'games' whereby international agreements are transformed into local 'deeds'. This is even more true in the area of environmental policy.

In this chapter we shall therefore adopt a more comprehensive notion of implementation, where implementation is seen as a distinct policy 'game' leaving its own imprint on the actual thrust of environmental policies. This approach opens the window to a different perspective on the problems faced in meeting one's international obligations; more specifically, it leads us to conceive of implementation 'failure' and 'success' not only as a matter of *will* (deliberate choice) but also as a matter of *ability* and capacity to govern. And we need not look towards the most dismal examples of poor countries in disarray, where the state has very little control over society (nor over itself) to appreciate that the latter may indeed be a very real concern.

Already in deciding whether or not to join or conclude an agreement, decision-makers will have made their calculations with an eye to the domestic interests that support or oppose the agreement. Indeed, whether or not a problem requiring international agreement even exists may be viewed differently by countries, in part as a function of their economic structure and the political power of different economic interests. For example, the unwillingness of the US government to agree on reductions of CO₂ emissions is due to its reluctance to bear the economic and political

costs that would result from the impact that control measures would have upon important societal interests. Likewise, different types of problem solutions and agreements on the measures to be taken will have different kinds of implementation impacts on domestic interests: the regulation of emissions of CFCs involves a limited, more or less clearly visible set of emitters; and substitutes for these (or many of these) chemical compounds are available, at economically acceptable costs. On the other hand, significant reductions of CO₂ emissions, involving a multitude of different kinds of emitters, would entail substantial costs for important segments of population, some of which are of crucial economic (and political) importance.

Putnam's (1988) approach to the analysis of international negotiations as two-level games is important in this connection – although it is necessary to work out the implementation game as a third level (or arena) of action. Although the interactions between Level II negotiators and Level I actors are likely to include estimations of the feasibility and implementability of any eventual agreement, the implementation process has its own political logic and dynamic. This means that even though the agreement was concluded in the belief that adequate political support would be forthcoming (and that the agreement would, therefore, be ratified), it may still prove difficult, if not impossible, to deliver on the commitments made; or the measures designed to implement the accord may look quite different from what was intended and needed – before the agreement was negotiated. An appreciation of the difficulties involved in moving from international agreement to national action and, ultimately, on to the required behavioral changes on the part of society's members, suggests that instances of *involuntary defection* may be at least as frequent and interesting as 'cheating' by deliberate choice.

4.2. *Levels of Implementation Activity*

The 'behavioral prescriptions' with which signatories are expected to 'comply' (and, consequently, so too the kinds of actions these national governments will have to take towards other actors within their countries) will vary with the particular problem field and the agreement reached. Still, there are a few general comments that can be made regarding the nature of implementation of international agreements. First of all, before we can analyze this phase of the international policy process, we must indicate what kinds of functional activities are involved in carrying out an international environmental agreement. Table 3 shows schematically the different levels at which the collective decisions of international regimes (IEAs) are implemented and the types of measures that need to be taken in doing so.

The result of the international negotiations on a particular environmental issue can be viewed as an 'international regime.' Such a regime is, of course, broader than the set of specific obligations directed at the participating states. Therefore, in

Table 3. Levels of implementation of international regimes

International level
International <i>normative</i> level: further development of principles, norms and rules
International <i>factual</i> level
(a) activities of IO set up by agreement
(b) joint activities by signatories
National level
National <i>normative</i> level: transformation into national law (ratification)
National <i>factual</i> level
(a) <i>de facto</i> implementation by state activity
(b) <i>de facto</i> implementation by private actors
(c) state supervision and stimulation of (b)

Note: Based on List and Rittberger, in this volume.

order to place the implementation of an IEA in the broader institutional context of which it is a part, it would seem more appropriate to examine the set of inter-related activities through which an international environmental regime ‘operates’. While it may seem somewhat awkward to say that a regime is ‘implemented’, it is through the concrete activities undertaken by various parts of the regime that the regime as a whole acquires its ‘operational reality.’ It is these activities that constitute implementation in the broader sense used here.

These regimes are seldom ‘one time things’; the principles, rules, norms and decision procedures they embody continue to change and evolve, with obvious consequences for the signatory states. The initial convention will need to be further specified in protocols before concrete steps can be taken or indeed ‘shares’ of responsibility – in the form of national quotas – can be apportioned. Over time, as a result of continuing research and debate, there comes a better understanding of the nature of the problem at hand and the range of possibilities for dealing with it. As consensus grows, initially general and non-specific commitments can be filled in and measures to achieve quality objectives sharpened. Consequently, national policies and programs will also have to be adjusted to changes in the normative structure of the regime as it evolves. It is in this sense that international conventions usually define a general normative framework within which the further ‘implementable’ programming – in the form of follow-up protocols or similar instruments – is carried out, spelling out the more specific regulations and other measures which are to be taken. These initial agreements also lay out a set of arrangements for the subsequent collective decision-making, i.e. regular meetings of national representatives, working groups or some kind of executive office or secretariat.

At the center of the implementation of the collective normative decisions of

international regimes are the obligations aimed directly at the contracting states themselves. Clearly, the ultimate impact of the regime will be determined by the actions taken by the signatory governments in translating the international commitments into programs of action designed to modify the behavior of the relevant target groups in their respective societies. In this connection a number of activities can be distinguished. First of all, before national implementation in the narrower sense, i.e. administrative action aimed at domestic target groups, can take place, these commitments must first be *ratified* by the appropriate authorities in each country. Then, the general principles and commitments contained in the agreement must be '*translated*' into *national legislation* or regulations (or in some other way authoritatively fitted into existing regulatory programs). International agreements themselves seldom contain specific measures which can be directly applied to the target groups. How is a 30% reduction in SO₂ emissions to be achieved? In what way are the emitters in question to be induced to change their behavior? In most cases, therefore, there must be some explicit national action between the treaty and its 'application' to the target groups to which these measures are ultimately directed. Once international agreements have been translated into national law, *actual implementation* in the strict sense can begin. Here they become part and parcel of standard national implementation procedures. In many cases the international origins of the regulations are not immediately visible to the implementing actors nor to the target groups.

It is important to note that these international agreements are not formulated, and certainly not implemented, in a vacuum. They enter a 'regulatory space' already occupied by a set of problem definitions and policy strategies, as well as with constellations of supporting and opposing societal and bureaucratic forces. They must be fitted into on-going programs and preferences for particular policy instruments. The national programs through which international obligations are to be met will be shaped within a set of institutional arrangements favoring particular actors and interests over others. In the case of The Netherlands, for example, the measures taken to implement the CFC reduction goals of the Montreal Protocol have taken the form of a program of cooperative regulation between government and industry, consistent with the overall national policy strategy of the country. Likewise, the US government has set up a marketable permit system consistent with regulatory ideology and the legal framework already in place. What a given country seeks through international negotiations, and what commitments it ultimately finds acceptable, along with the way in which the agreements reached are translated into national action, will be function of this on-going political dialogue among domestic interests.

National governments (or those officials at the national level responsible for implementing the international agreement) also have a number of obligations toward the regime, apart from executing the national program designed to regulate the

behavior of the target groups. For example, they are obliged to monitor the results achieved within their country and to report this information to the other members of the regime through the secretariat. Often, there has been a decision to engage in joint research activities or, at least, to coordinate national programs and to exchange information. Likewise, representatives from the signatory countries will participate in working groups, conferences and other forms of joint deliberation. National governments themselves can also take the initiative to promote a better understanding of the problem at issue both within and outside the membership of the regime. In short, there is also an important set of activities linking national actors with their counterparts in other countries and with different organizational components of the regime itself.

At the national level there are, then, three main phases of decision-making with regard to the implementation of international agreements: national ratification of the agreement; transformation of these obligations into some form of national law or regulations; and the application of these measures via national administrative structures and processes to the segments in society whose behavior must be changed. Each of these sets of decisions will be the focus of political interest and pressure from those sectors in society for which the agreement entails costs or benefits. Each phase can involve a different pattern of interaction among governmental and societal actors. In this process of domestic implementation, decision-makers involved in the management of foreign affairs as such (as the representative of 'the national interest') will normally play only a marginal role. It is also obvious that in none of these phases does it make much sense to talk of a sovereign actor rationally totting up the costs and benefits of compliance. For one thing (except perhaps for ratification of the agreement) compliance (in the sense of actually carrying out the agreement) is not an either/or thing; for another, there is no unitary actor in charge of or making decisions on these matters.

The implementation of IEAs will primarily be something states (and their nationals) must do. It will usually not be the case that there will be an international organization that in the name of the regime implements regime norms and rules internationally on a supranational basis. Still, there are a number of implementing activities that take place at the international level and with regard to which 'regime organizations' can play a role. Just what such actors will be expected to do will depend on the nature of the regime in question, i.e. the kinds of obligations member states have toward each other, the type of joint activities in which they are engaged, and the degree to which the regime is institutionalized in some kind of administrative organization. When present, these organizations can, for example, play important roles in controlling the implementation by states and assessing its effects. They can have important responsibilities for monitoring the impact of state activity on the quality of the environment. IEAs usually have some provision for the exchange of information gathered; the secretariat of the regime is usually given

the job of receiving, processing and distributing the relevant data. Moreover, IEAs contain a number of activities and tasks that are to be performed jointly by the members of the regime (e.g. research) and by the organizational unit established to 'represent' the regime collectively between general meetings. Such a secretariat would most likely be involved in organizing working sessions of representatives from the member countries and in preparing subsequent meetings of the membership of the regime.

What emerges from such a description of the actions through which international environmental regimes operate is a picture of a *multilevel complex* of norm setting and rule-implementing activities performed by different sets of actors at both the national and international levels. Approached in terms of a series of interrelated national and international activities, regime implementation is more than a matter of national compliance with specific obligations. A number of separate yet linked networks join public and private actors in the performance of these different functions. Together they determine to what extent a regime will effectively penetrate the societal processes within the member countries through which the intended behavioral changes are to be effected.

5. Implementation '*Capacity*': Decision Structures for Effective Domestic Action on IEAs

It is, of course, not enough merely to call attention to the domestic 'roots' of international cooperation. Beyond this, it is necessary to examine the structures through which these domestic forces are channeled into the decision processes through which these actors interact at both the national and international levels. In the work of East and Sundelius some of the important impacts of increasing interdependence on foreign policy-making structures have been traced (East, 1984; Sundelius, 1984). These analyses provide useful suggestions for examining both the array of actors involved in managing different aspects of a country's foreign affairs and the emerging set of relationships between the 'traditional' managers and the various domestic 'upstarts' who have inserted themselves into the international policy arena. Although such information is intended to enable us to understand how participation in an international system characterized by increased interdependence may affect national foreign policy processes (Sundelius, 1984), it, too, remains incomplete without an examination of the actual patterns of interactions and the decision processes through which these actors, and their allies from the different sectors of society, bargain out the 'national' preferences and policy positions that will be represented in the 'international' game.

Here the analytical focus must be on the structure and process of the national policy-making game. In this sense – or for this phase – foreign policy is also

domestic policy (where, to be sure, both the constraints and opportunities for national action set by international interdependence must be taken into consideration). Such an analysis could profitably follow the lead of various studies of EC policy-making and implementation. Information is needed on both the mechanisms by means of which the positions of the different ministries (and the societal interests they 'represent') regarding a particular issue are coordinated and hammered into a 'national position' for international negotiations, and the structures through which the decision systems in the individual member states are linked with decision-making arenas at the international level.

Jacobson (1984, pp. 110–113) uses the notion of the representative sub-system to get at this linkage mechanism: a sub-system spanning both the international organization (in this case) and its constituent units. At one 'end' we have the delegates or national representatives to the organizations or negotiations; at the other end there are actors participating in the (mostly bureaucratic) national decision-making process through which the instructions for these delegates are drafted. Behind or parallel to these mechanisms for channeling the inputs from different governmental organizations are the activities of a variety of other actors involved in the domestic determination of the policies that the state pursues. It is, as Jacobson points out, through these sub-systems that limits are set as to what international organizations can do; and it is through them that the decisions taken in the international organizations are transmitted back to the states for implementation. These structures and processes tie the games at the different levels (more or less) effectively together. And it is the analysis of these interactions that will show which actors from the different components of national bureaucracies are involved in preparing government positions on international issues and then negotiating on them with their counterparts at the international level. An examination of these patterns of linkage between games would also make clear in which ways the societal interests concerned with the issue at hand are incorporated into the relevant decisions.

The implementation of an international environmental regime is then a very complex process. It requires effective cooperation of different sets of actors operating at both the national and international levels. There are many points at which things can go wrong – despite the best intentions of the actors involved. Given this complexity, what are some of the factors that ultimately determine how effective a regime will be in successfully carrying out its program of activities? Which factors shape the *capacity of members* of international regimes to meet their obligations and responsibilities?

Such questions point to a program of research yet to be carried out rather than to a body of knowledge already available. Still, we can at least point to some of the dimensions along which such answers might be sought.

In a broad sense 'implementation capacity' can be conceived of as a function of properties of government itself (including the administrative system) and its

relationship to society in general and the social groups directly affected by the regime in particular.

Looking first at government itself, one dimension that can be expected to affect implementation capacity is the '*strength*' of environmental agencies relative to other branches of government. Other things being equal, the greater the scope and depth of formal competence vested in environmental agencies, the more resources (personnel and funds) allocated to these agencies, and the greater the '*political clout*' of its leaders, the greater will be the capacity to implement environmental policies. These dimensions can, in principle, be translated into operational indicators. An important point to keep in mind in this regard is that it will be the personnel directly concerned with the translation of the international commitments into national programs (and who then either themselves put these into operation or monitor and control those who do) that are likely to develop an institutional interest in seeing that the agreements are executed. Here is where we find the '*institutional home*' of the epistemic communities which sometimes play an important role in developing and implementing international programs (Haas, 1992).

Implementation capacity also seems to depend on the '*vertical unity*' of governmental itself, i.e. on the division of authority and labor between different levels of government (Weale, 1992). To the extent that the authority to do what is required to implement an international agreement is in the hands of sub-national bodies and officials, one can easily imagine that environmental agencies at the national level will have to bargain with these subnational actors over the conditions of implementation. Such bargaining can, at a minimum, delay implementation, but it may even thwart the efforts of the national government to honor commitments undertaken in international agreements. This is so particularly when we are dealing with environmental problems that are not strictly local in their ramifications. Whenever some activity causes environmental damage beyond the jurisdiction of local government, its cost-benefit calculus can differ significantly from that of the nation at large. All things being equal, the greater the externalities, the more the policy preferences of local government will deviate from that of central government. In these cases local actors can be expected to be less favorable towards strict environmental measures than the national government.

Whether or not such bargaining between national authorities and sub-national actors becomes necessary will also depend on the overall *policy strategy* selected at the national level for the implementation of the international agreement. The formal vertical division of labor does not by itself make a decentralized implementation inevitable. If a country, such as is the case in the United States, chooses to implement the Montreal Protocol by means of a nationally organized and administered system of marketable emission rights, national decision-makers will retain direct control and not be directly dependent on sub-national actors. On the other hand, an implementation program based on emission reductions negotiated between

industry and government, as we find in the Netherlands, means that national environmental officials are 'in charge' to a lesser extent. However, in both cases, national decision-makers will have to depend on other sub-national public and private actors to supply important informational inputs or services needed to carry out the implementation strategy chosen. In this sense, the implementation of international environmental agreements at the national level will always remain a multi-actor and multi-level process.

High decentralization of authority is also likely to weaken the position of government relative to societal actors. This is partly due to lack of expertise. Another and perhaps even more important factor may be that local government normally will find itself in a weaker bargaining position *vis-à-vis* 'big business' than national government. For example, by threatening to relocate, a large company can more easily play off small municipalities or even sub-national regions against each other when each is left to take care of its own interests than when a national actor bargains on behalf of all of them. The 'strength' of government relative to society depends more generally upon its independence of the regulatee, i.e. the societal group(s) that is (are) the target(s) of regulatory action. No one will expect a government that owes its position to the support of the big landowners to pursue a policy of redistribution of land. Similarly, a government that is heavily dependent upon the support of those segments of society that must shoulder the costs of a particular environmental policy can hardly be expected to pursue that policy with great vigor. Its failure to do so is not merely a matter of lack of 'political will'; without a certain minimum of independence from the targets of its regulatory measures, it simply does not have the capacity to act against the interest of those segments or groups.

As this discussion makes clear, effective implementation of international agreements is not only a question of administrative capability; political 'energy' is equally if not more important. The strength of the commitment undertaken by a government will be determined, in part, by the distribution of the costs and benefits of regulating the particular substances or activities among various social groups. Such calculations will be affected by the nature of the agreement and the kinds of behavioral changes required of the domestic target groups involved. Clearly the greater the change sought in existing patterns of behavior and the more deeply vital interests of the groups are affected, the greater the resistance to the efforts of national governmental officials to implement their programs. Such resistance can stir up important political conflicts which affect the ability of national authorities to secure support for the treaty obligations and for the execution of the measures designed to realize them.

Now, government authorities are, of course, by no means helpless in the face of the resistance of these target groups. They can first of all try to design operational policies so as to maximize their domestic political feasibility (see Underdal, in

this volume). Moreover, they, too, can seek to mobilize support for their program. In this connection, both national and international non-governmental organizations can play an important role in monitoring implementation performance and in generating public support behind the international agreement. The general pattern of political support and opposition with respect to the regulatory program being carried out will be a crucial factor in determining what comes out of it. Still, the commitment of the political leadership and the enthusiasm of the administrative officials are not unchangeable facts of life, but rather values that can be changed through political pressures. The constellation of interests and the balance of forces defining the ‘politics of implementation’ will be important factors affecting the domestic effectiveness of an international environmental regime. Here, too, the very existence of the international agreement can affect the relative balance between forces within the domestic constellation of political forces. As a formal policy commitment, it can legitimate certain demands and expectations regarding national efforts to meet these obligations. It can also serve as a rallying point for the activities of both national and international groups supporting the objectives of the regime.

Finally, it bears repeating that not *all* the activities connected with implementing international agreements are purely ‘domestic’ processes. In carrying out international accords, national administrators often interact with their counterparts in other countries and in international organizations. Over time, direct personal contacts and communication develop between those officials responsible for taking and monitoring various decisions in connection with the carrying out of a country’s obligations and between them and the international secretariats concerned. As Peter Sand (1990) points out, these transnational communications and contacts among professionals are not only functionally important for getting the job done; they can also serve as incentives for expanding and enlarging the international agreements with which these national officials are involved. Furthermore, they create a professional reference group to which some loyalty may be owed. Among other things, this can lead to the internalization of certain norms and practices that make cheating during implementation more difficult and less attractive – insofar as in the power of these officials to guarantee compliance.

6. Conclusion

If we wish to determine whether or not regimes ‘matter’ – i.e. whether they have independent influence on state behavior, or whether international agreements amount to more than ink on paper – we need to trace carefully the processes, structures and values at the national level which determine the manner in which such agreements are carried out and responded to. We cannot focus exclusively on the structure of the interstate game, looking for the constraints upon state behavior that would

encourage compliance with international contracts. To the extent that an analysis of international regimes ignores domestic political processes, it will not be able to show the way in which regimes actually influence policy choices at the operational level. Thereby it closes off one important avenue for examining questions of regime effectiveness. Nor will we be able to understand how the positions nations take and defend in international negotiations leading to the agreement come about without considering the way in which international negotiations both mobilize and penetrate domestic society.

Much of what we have said about the domestication of international commitments is, admittedly, quite familiar. What we have tried to do is raise the question as to whether the internationalization of domestic concerns does involve a qualitatively *different* set of issues, structures and processes than what traditionally has occupied foreign policy analysts and policy-makers. Second, since the domestic functional ministries, in their international activities, and foreign affairs policy-making system, are intertwined (if they are not, in fact, two sides of the same coin) in both formulating and defending (negotiating) national positions, it is important to examine the decision-making structures and processes through which they and the societal interests they 'represent' are linked in taking decisions at the domestic and international levels. And, third, the game is not over when the ink on the treaty or agreement has been blotted. At that point the implementation process begins through which the ultimate 'bottom line' of the commitment will be achieved in the behavior and activities of groups and individuals in the societies of signatory nations. And this implementation of IEAs will involve a complex web of international, trans-governmental, transnational and national (both public and private) interactions which makes it difficult to grasp *only* in terms of enforcement and compliance. Management tasks in connection with both the negotiation and the implementation of international commitments must be fulfilled at all these levels.

Whatever the structure of this management network and whichever the specific activities that are channeled through it, focussing on the problems and opportunities of achieving effective international cooperation makes abundantly clear that deliberate defection from these contracted obligations may very well be the *least* of our worries.

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Notes

- ¹ Moreover, they are not mutually independent, expanding the scope and increasing the depth of government intervention may be one strategy of coping with problems created by increased sensitivity or vulnerability.
- ² On the other hand, a government pursuing a more ambitious environmental policy may provide domestic producers of technologies for abatement or production with incentives to develop their products to a level that gives *them* an advantage *vis-à-vis* their foreign competitors.
- ³ Events data for Norway covering 19 months from 1978 through 1986 (N = 1989) identified the Ministry of Foreign Affairs as actor in 37% of all events, while 'domestic' ministries, taken together, were involved in 26% (see Underdal, 1987). Interestingly, a smaller data set for Sweden showed exactly the same figure for the MFA (Odom, 1990; for 'domestic' ministries no corresponding figure was reported).
- ⁴ The results obtained in a multivariate analysis (MCA) with four issue dimensions and independent variables are shown below:

Issue dimension	Actor							
	MFA		Environment		Sector		Business/labor	
	(eta)	(beta)	(eta)	(beta)	(eta)	(beta)	(eta)	(beta)
Impact scope	0.19	0.01	0.07	0.23 ^b	0.40	0.27 ^b	0.41	0.33 ^b
Issue-area	0.27	0.26 ^b	0.14	0.29 ^b	0.35	0.18 ^b	0.30	0.12 ^b
Values/interests	0.15	0.14 ^b	0.08	0.24 ^b	0.24	0.11 ^b	0.15	0.02
Specificity	0.04	0.03	0.08	0.09 ^b	0.11	0.06	0.15	0.10 ^b

^{a/b} = significant at 0.05/0.01 level respectively. All independent variables are entered with three scores. The scope of domestic impact variable includes the score 'national' issues, issues with national as well as subgroup(s) impact, and issues that affect primarily one or more 'subgroup(s)'. For *issue-area* the categories are 'security', 'economic wealth' and 'other'. The *values/interests* variable distinguishes between issues referring essentially to values, issues referring essentially to interests, and those that are 'mixed'. With regards to policy *specificity*, the categories are 'macro-policy', 'micro-decision', and 'mixed/ambiguous'. About 800 cases were available for this run. (The figures for the Ministry of the Environment indicate that the ministry is most involved in 'national', non-security issues, affecting values as well as interests).

- ⁵ In a multiple classification analysis with a substantive problem area, scope of domestic impact, symmetry of domestic impact, and policy specificity as *independent* variables, all three groups of actors were significantly ($p < 0.05$) more frequently involved in low than in high symmetry issues (beta coefficients = 0.35 for political parties, 0.14 for 'idealistic' NGOs, and 0.11 for ad hoc campaigns).
- ⁶ The fact that competing hypotheses can be formulated leads to a crucial question: under which circumstances can these categories of issues be expected to generate a 'numerical' rather than an 'encapsulated' decision-making process? We would suggest that important clues can be found in two *ceteris paribus* propositions: (1) the more substantial the costs or benefits perceived to be at stake by and for the 'many', the more likely is some amount of 'mobilization' of the general public or their representatives; (2) the closer the issue is linked to other salient values or interests, and the better it fits into established political cleavages, the less likely that participation will be confined to only a narrow segment of institutions and organizations.

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