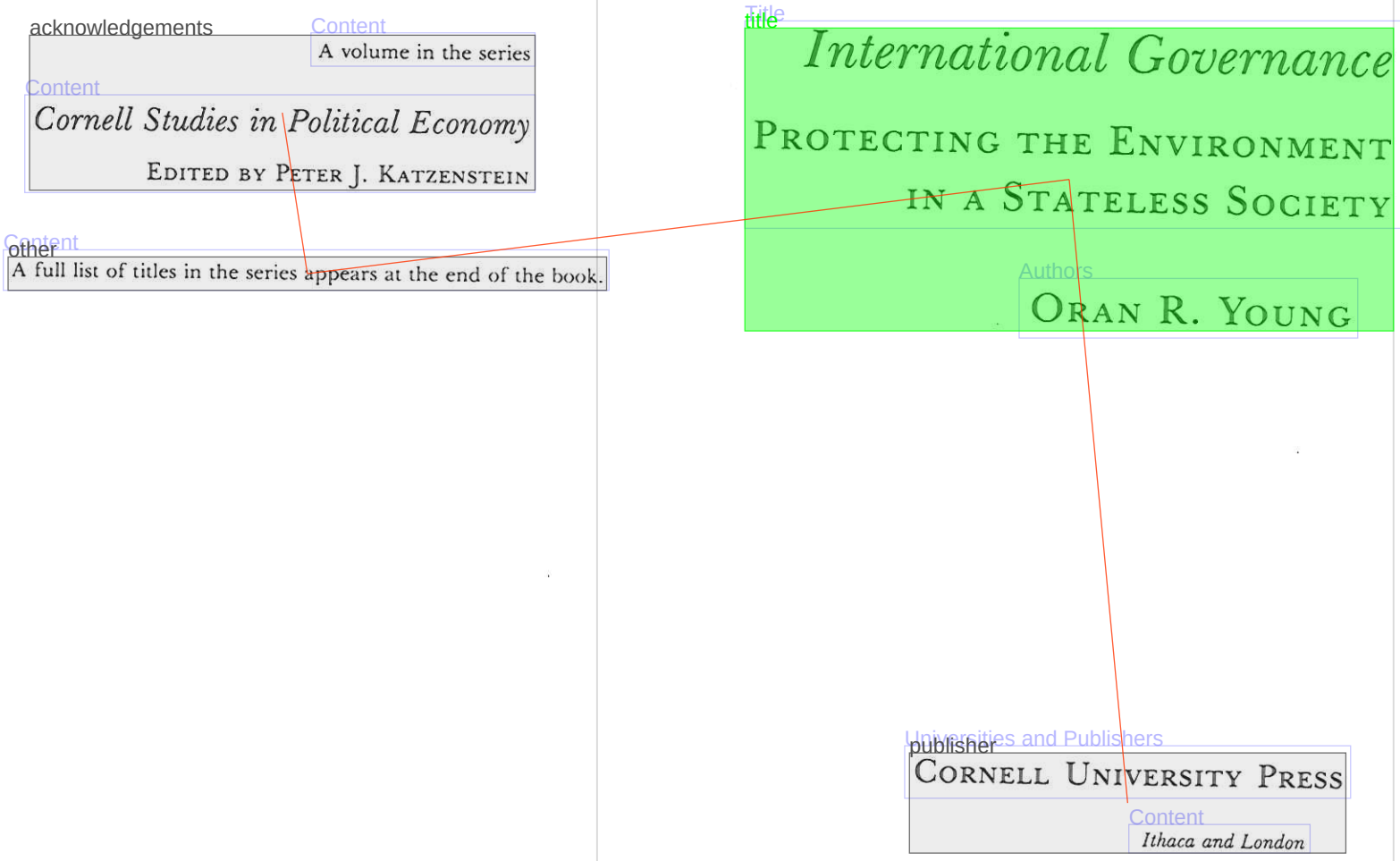
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CHAPTER SIX

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The Effectiveness of International Governance Systems

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Critical threats to the earth's habitability demand that humankind rise to the challenge of creating new and more effective systems of international environmental governance. These threats are largely anthropogenic in origin and manifest themselves in such forms as desertification, deforestation, ozone depletion, climate change, the loss of biological diversity, disruptions of the global hydrological cycle, and, ultimately, perturbations in coupled atmosphere/ocean/land systems capable of triggering worldwide ecological crises. They have stimulated an unprecedented growth in the demand for governance at the international level. Protecting the stratospheric ozone layer requires sustained cooperation among affluent residents of North America, Europe, and Japan, who must find substitutes for chlorofluorocarbons, and aspiring residents of Brazil, China, India, and other developing countries, who must resist the temptation to increase dramatically their consumption of refrigerants containing these chemicals. Avoiding global warming calls for the development of effective and coordinated emission-control systems to limit the release of greenhouse gases—carbon dioxide, methane, CFCs, nitrous oxide—from a wide range of sources in every corner of the globe. Stemming the loss of biological diversity entails harnessing socioeconomic forces such as international trade and monetary sys-

footnote

A somewhat different version of this chapter is slated to appear as Oran R. Young, "Introduction: The Effectiveness of International Governance Systems," in Oran R. Young and George J. Demko, eds., *Global Environmental Change and International Governance*, forthcoming.

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Effectiveness

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tems that transcend national borders, even though the actual losses may be region-specific and closely linked to the destruction of moist tropical forests.

What does it take to develop and maintain effective governance systems to deal with these problems? When we turn from generalities to the specifics of such complex environmental problems as climate change or the loss of biological diversity, the barriers to sustained cooperation seem more substantial than they may appear to be in the simple scenarios often used to illustrate the concepts of interactive decision making and collective action. More often than not, these environmental matters present sharp challenges to those in search of appropriate ways to conceptualize the problem to be solved and of satisfactory methods to address issues of sustainability, social welfare, and equity embedded in them. It is not easy, for example, to devise international regimes that satisfy, at one and the same time, the concerns of those whose aim is to spread the benefits of economic growth—and the material wealth that sometimes goes with it—to the developing world and those who are convinced that sustainable development requires profound changes in the materialistic life-styles of people in both the developed and the developing worlds. Much the same can be said of the difficulties confronting those endeavoring to reconcile emerging northern concerns for relieving pressure on the earth's life support systems and the increasingly insistent southern demands for a restructuring of persistent economic imbalances to meet reasonable standards of equity.

The record shows considerable variation in the effectiveness of environmental governance systems operative at the international level. Some regimes (for example, the Antarctic Treaty System or the evolving ozone regime) have been notable successes, while others (for example, many of the international fisheries regimes) have proven relatively ineffective. Despite the unprecedented scope of some of today's environmental problems, much can be learned about the factors that determine the effectiveness of international governance systems from an examination of actual experience with a variety of environmental regimes. This chapter sets the stage for a systematic study of these determinants of effectiveness by addressing conceptual issues in this realm and exploring the range of variables that require consideration in thinking about effectiveness. A growing number of students of international governance are preparing to take up the challenge of improving our knowledge of this subject.

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What do we mean when we speak of the effectiveness of international regimes or governance systems? Can we devise some simple way to describe and, ideally, to measure variations in levels of institutional effectiveness? What are the prospects for pinpointing factors that, singly or in combination, determine the success or failure of institutional arrangements in international society? Are some of these factors so central that they constitute important, perhaps even necessary, conditions for the achievement of effectiveness across a wide range of places and times? Posed in these general terms, the issue of effectiveness seems straightforward enough. Simply put, we want to find out why some regimes work well, while others have little impact or even become dead letters. Quite apart from the value of such knowledge to those seeking to understand the workings of international society, persuasive answers to this question would be of obvious interest to those responsible for designing and managing governance systems dealing with specific issues.

Effectiveness, it is clear, figures in this line of inquiry mainly as the dependent variable, that is, the phenomenon we seek to account for or to explain. Accordingly, our goal is to observe and measure variations in levels of effectiveness (or in some index of effectiveness) and then to construct a set of propositions to explain or predict these variations. Yet the more we bear down on the specification of effectiveness as a dependent variable, the clearer it becomes that we are dealing with a suite of related variables or, at best, a multidimensional variable whose separate dimensions need not and frequently do not co-vary in any simple way.[1] In the course of my work on international

[1] For other recent accounts touching on the concept of effectiveness see Peter M. Haas, "Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control," *International Organization* 43 (Summer 1989), 377–405; Volker Rittberger, ed., *International Regimes in East-West Politics* (London: Pinter, 1990); Arild Underdal, "Negotiating Effective Solutions: The Art and Science of 'Political Engineering,'" unpublished essay, University of Oslo, 1990; Robert O. Keohane, "Multilateralism: An Agenda for Research," *International Journal* 45 (Autumn 1990), 731–764; Jorgen Wettestad and Steinar Andresen, "The 'Effectiveness' of International Resource Cooperation: Some Preliminary Findings," paper presented at the annual convention of the International Studies Association, March 1991; Oran R. Young, "The Effectiveness of International Institutions: Hard Cases and Critical Variables," in James N. Rosenau and Ernst-Otto Czempiel, eds., *Governance without Government: Change and Order in World Politics* (New York: Cambridge University Press, 1992), 160–194; and Peter M. Haas, Robert O. Keohane, and Marc A. Levy, eds., *Institutions for the Earth: Sources of Effective International Environmental Protection* (Cambridge, Mass.: MIT Press, 1993).

governance, I have been able to identify six distinct dimensions (there may be more) of effectiveness; I call them effectiveness as problem solving, effectiveness as goal attainment, behavioral effectiveness, process effectiveness, constitutive effectiveness, and evaluative effectiveness. A discussion of these perspectives on effectiveness will serve to avoid confusion and misunderstandings in our subsequent efforts to pin down factors that explain variations in levels of effectiveness attained by different international environmental governance systems.

Effectiveness as Problem Solving

First, and undoubtedly foremost, we want to know whether regimes are effective in the sense that they operate to solve the problems that motivate parties to create them in the first place. The problems that stimulate the formation of international regimes are diverse. They may, for example, involve the depletion of renewable resources as in the cases of stocks of fish or fur seals; the allocation of flow resources as in the case of water carried by rivers passing through several jurisdictions; the use of congestible common property resources as in the case of broadcast frequencies or orbital slots; or the conduct of scientific research in areas subject to jurisdictional differences as in the case of Antarctica. Also, the problem a regime addresses may be framed differently by various parties to the arrangement or be subject to redefinition over the life of the regime. The whaling regime began as a means of coping with stock depletions to ensure sustainable yields for consumptive users, for instance, but it has come to focus with the passage of time on the problem of protecting whales from all consumptive uses. Needless to say, judgments regarding the effectiveness of a regime may vary depending on how those making such judgments choose to frame the problem. What is more, the problem itself may change or take on new dimensions with the passage of time. So, for example, most wildlife management regimes originated as devices for avoiding severe stock depletions resulting from excessive harvesting on the part of human users. But over time, the problem of maintaining healthy stocks of wild animals has increasingly become a matter of coping with the consequences of habitat destruction.

Approached in this way, it is easy to see that the effectiveness of regimes varies greatly. In the fur seal case, the introduction of the

regime set forth in the 1911 convention produced a striking rebound in the seal population by prohibiting pelagic sealing and regulating harvests on land. The Antarctic Treaty regime has proven remarkably effective in allowing scientific research and other cooperative activities to go forward, despite the inability of the parties to arrive at any final resolution of their jurisdictional differences. It is harder, though not impossible, to make a convincing case for the effectiveness of the regime set forth in the 1973 Convention on Trade in Endangered Species of Fauna and Flora as a means of solving the problem of maintaining healthy stocks of rhinoceros or elephants. For its part, the pollution-control regime developed under the Mediterranean Action Plan has not put an end to the problem of pollution in the Mediterranean Basin.

Effectiveness as Goal Attainment

Goal-oriented effectiveness, by contrast, is a measure of the extent to which a regime's (stated or unstated) goals are attained over time.[2] Of course, there is frequently a straightforward and easily identifiable relationship between goal attainment and the search for solutions to motivating problems. The management of stocks of wild animals for maximum sustainable yield or optimal sustainable population, to take a simple example, requires that solutions be found to the problem of severe depletions resulting from excessive harvests or the destruction of critical habitat. But goal attainment and problem solving need not go together. Putting in place an equitable process of allocating harvest quotas for wild animals (a specific goal of the fur seal regime) offers no assurance that a solution to the problem of stock depletions will be found. Controlling the trade in endangered species (a prime goal of the CITES regime) is not sufficient to protect the species in question from going extinct. Reducing sulfur dioxide emissions by 30 percent (the stated goal of the 1985 protocol to the Geneva Convention on Long-Range Transboundary Air Pollution) does not guarantee the biological recovery of German forests or Swedish lakes.

This distinction between effectiveness as problem solving and goal-oriented effectiveness becomes sharper when we broaden our perspective to consider unstated goals. More often than not, those engaged in regime formation are motivated by goals they do not feel comfortable articulating in public as well as by goals they deem appro-

[2] Oran R. Young, "The Political Economy of Fish," *Ocean Development and International Law* 10 (1982), 199–273.

priate for inclusion in public statements. Typically, these unstated goals deal with distributive concerns in contrast to the pursuit of some common good. To take a classic example, it is standard practice for those advocating expanded coastal state jurisdiction over fisheries to emphasize conservation in presenting their case in public. But it is common knowledge that they are motivated as well by a desire to protect their own fishers from competition on the part of foreign fishers. Similarly, the provisions of pollution-control regimes often owe as much to the efforts of the parties to protect certain industries as to a desire to promote the common good by avoiding or reducing environmental impacts. In such cases, the link between problem-solving effectiveness and goal-oriented effectiveness is apt to be particularly tenuous. As recent experience with the marine fisheries makes crystal clear, institutional arrangements may prove extremely effective in fulfilling the goal of protecting domestic fishers but contribute little toward solving the underlying problem of stock depletions caused by excessive harvests.

Behavioral Effectiveness

Yet another way of thinking about effectiveness is to ask whether the operation of a regime causes one or more of its members (or individuals, corporations, and organizations operating under the jurisdiction of the members) to alter their behavior, either by doing things they would not otherwise have done or by terminating or redirecting prior patterns of behavior.[3] The reduction of Japanese and Soviet investments in commercial whaling (by retiring existing whaling fleets without replacement) constitutes a behavioral change that is clearly related to the operation of the whaling regime, though some would argue that the causal connection is hard to demonstrate. The dramatic growth of American investment in capacity to harvest groundfish is unquestionably an outgrowth of the introduction of a regime featuring extended coastal state jurisdiction during the 1970s. Similarly, the striking increase in corporate research and development aimed at developing substitutes for CFCs occurred in the wake of the formation of the ozone regime under the provisions of the 1985 Vienna Convention for the Protection of the Ozone Layer and, especially, the 1987 Montreal Protocol on Substances That Deplete the Ozone Layer.

[3] See Young, "The Effectiveness of International Institutions," for emphasis on this dimension of effectiveness.

Although behavioral effectiveness may be correlated with problem-solving effectiveness or goal-oriented effectiveness, there is no basis for assuming that this will always be the case. As is now becoming clear, for example, the growth of American investment in the ground-fisheries of the Bering Sea region has simply substituted a new threat to the health of the fish stocks for the old threat posed by foreign fishers. The introduction of systems of transferable or tradable permits in marine fisheries typically has the effect of stimulating fishers to increase investments in sophisticated technologies, a behavioral response that can easily run counter to the requirements of both problem-solving and goal-oriented effectiveness. Similarly, there are reasons to doubt whether some of the chemicals developed as substitutes for CFCs will turn out to be environmentally benign in the long run. Equally troubling, the behavioral effects attributable to the establishment of an international regime may amount to a form of displacement in the sense that they create a new problem in the process of solving an old one. Banning the consumptive use of various species of great whales, for instance, has had the effect of increasing pressure on whale stocks not included in the ban. All told, therefore, it seems clear that the behavioral effects arising from the operation of a regime must be assessed on their own terms; they cannot be subsumed under the rubrics of effectiveness as problem-solving and goal-oriented effectiveness.

Process Effectiveness

A way of thinking that appeals to many administrators, lawyers, and political scientists treats effectiveness as a matter of the extent to which the provisions of an international regime are implemented in the domestic legal and political systems of the member states as well as the extent to which those subject to a regime's prescriptions actually comply with their requirements.[4] This approach has the virtue of suggesting relatively straightforward procedures for measurement. It is easy enough to determine whether individual states have ratified conventions or treaties setting forth the provisions of regimes and small

[4] Peter H. Sand, *Lessons Learned in Global Environmental Governance* (Washington, D.C.: World Resources Institute, 1990); Edward Miles and Kai N. Lee, "Is There Intelligent Life on Earth? Learning about Global Change," paper presented at the annual convention of the American Political Science Association, August 1990; and Abram Chayes and Antonia H. Chayes, "Adjustment and Compliance Processes in International Regulatory Regimes," in Jessica Tuchman Mathews, ed., *Preserving the Global Environment* (New York: Norton, 1991), 280–308.

passed implementing legislation to put these provisions into practice within their own jurisdictions. An account of the extent to which such actions have led, in turn, to the promulgation of more detailed regulations designed to transform the provisions of a regime into a day-to-day routine is ordinarily feasible as well. Though monitoring compliance is apt to be a more complex process, there is little ambiguity at the conceptual level about what is at stake in such an approach to the assessment of effectiveness.

But what is the relationship between this conception of effectiveness as a political process centering on implementation and compliance and effectiveness in any of the previous senses? Although implementation and compliance are undoubtedly necessary to solving problems and attaining goals, the links between these measures and the other conceptions of effectiveness are far from straightforward. Perfect compliance is not sufficient to solve problems when key provisions of a regime are either inadequate or inappropriate. During the early years of the whaling regime, for example, compliance was high, but the International Whaling Commission set quotas for the harvesting of whales that were not restrictive enough to ensure the recovery of key stocks. Conversely, problem solving can occur even when levels of implementation and compliance are far from perfect. If the move to phase out the use of CFCs convinces the principal producers of these chemicals to close out their production lines and replace them with more benign substitutes, the problem of protecting the ozone layer from further damage may be effectively solved, even if some states participating in the arrangement are somewhat lax in implementing the rules of the regime. The potential for divergences between process effectiveness and behavioral effectiveness is even more apparent. Some shifts in behavior (for example, investments in advanced technologies on the part of those holding fishing permits) are clearly intended to soften the impact of a regime's rules without actually violating the rules. Other behavioral changes (for instance, increased efforts to harvest alternative species or to market unregulated chemicals) are not captured in statistics relating to implementation and compliance at all, though they may well be consequences of the establishment and operation of a regime.

Constitutive Effectiveness

Quite apart from its success in solving problems or facilitating the attainment of goals, a regime may be effective in constitutive terms in

the sense that its formation gives rise to a social practice involving the expenditure of time, energy, and resources on the part of its members.[5] The Antarctic Treaty Consultative Meetings (ATCMs) and the activities they trigger, for example, have become a significant focus of attention for a number of parties even though the Antarctic regime is a rather modest international institution. The International Whaling Commission may or may not succeed in its efforts to protect stocks of certain species of whales, but participation in the political processes centered on the activities of the commission has become a major concern for countries including both the United States, which generally opposes the consumptive use of whales, and Japan and Norway, which have consistently resisted efforts to terminate consumptive use. It may well be that one of the factors that ultimately sank the regime for deep seabed mining articulated in Part XI of the 1982 Convention on the Law of the Sea was a reluctance on the part of some countries to commit themselves to a process that would have required the investment of considerable energy and resources on an ongoing basis.

Constitutive effectiveness differs, sometimes dramatically, from the other conceptions of effectiveness under consideration here. A social practice may flourish in the sense that it absorbs a sizable fraction of the attention and resources of those participating in it—it may even play a role in defining their identity—without becoming effective in the sense that its operation either solves the problem that stimulated its creation or attains the goals articulated by its founders.[6] This is, in fact, a central theme of the growing literature on government or nonmarket failure treated as a counterpart to market failure.[7] As experience with a variety of regimes dealing with the conservation or preservation of renewable resources (for example, stocks of fish or marine mammals) attests, this phenomenon is just as common in international society as it is in other social settings. Nor does the emergence of a social practice consuming significant amounts of time and energy offer any guarantee that parties will act to implement a re-

[5] For an argument that institutions can and often do play formative roles in establishing the identity and interests of the actors in a social setting see Alexander Wendt and Raymond Duvall, "Institutions and International Order," in Ernst-Otto Czempiel and James N. Rosenau, eds., *Global Changes and Theoretical Challenges: Approaches to World Politics for the 1990s* (Lexington, Mass.: Lexington Books, 1989), 51–73.

[6] On the social construction of political relationships see Alexander Wendt, "Anarchy Is What States Make of It: The Social Construction of Power Politics," *International Organization* 46 (Spring 1992), 391–425.

[7] Charles Wolf, Jr., *Markets or Governments: Choosing between Imperfect Alternatives* (Cambridge, Mass.: MIT Press, 1988).

gime's key provisions within their domestic jurisdictions or to ensure high levels of compliance with a regime's central rules. It is easy enough to find examples of this phenomenon involving natural resources and the environment; one good example is the problems of ensuring compliance with the rules of the CITES regime in a wide variety of domestic settings. But the classic examples of the phenomenon in international society undoubtedly occur in connection with regimes dealing with arms control and the protection of human rights.

Evaluative Effectiveness

For many observers, effectiveness is fundamentally a matter of performance rather than a simple measure of the consequences flowing from the operation of governance systems. Those who take this view generally do not ask whether a regime makes a difference in some generic sense. Instead, they want to know whether the regime produces results that are efficient, equitable, sustainable, or robust.[8] Specifically, the question is not just whether the whaling regime is succeeding in its effort to conserve whale stocks but whether it is operating in a cost-effective manner in the sense that comparable results could not be achieved at a lower cost or superior results achieved at a comparable cost by substituting some other institutional arrangements. The same is true regarding the extent to which the outcomes generated by international regimes (for example, the allocation of broadcast frequencies or the distribution of benefits flowing from the harvest of fish) are just or fair, either in end-state or in procedural terms.[9] Rapid changes involving international environmental problems (for instance, ozone depletion or climate change) have led many recent observers to place increased emphasis on adaptability to changing conditions as a performance criterion in assessing the effectiveness of regimes.[10]

Evaluative effectiveness taps a set of concerns that differ from

[8] For a general discussion of performance criteria see Robert Dorfman and Nancy S. Dorfman, "Introduction," in Dorfman and Dorfman, eds., *Economics of the Environment*, 2d ed. (New York: Norton, 1977), 1–37. The application of this reasoning to international institutions is discussed in Beth V. Yarborough and Robert M. Yarborough, "The New Economics of Organization," *International Organization* 44 (Spring 1990), 235–260.

[9] On the distinction between end-state and procedural conceptions of justice see Robert Nozick, *Anarchy, State, and Utopia* (New York: Basic Books, 1974), Part II.

[10] For a prominent example see Richard Elliot Benedick, *Ozone Diplomacy: New Directions in Safeguarding the Planet* (Cambridge, Mass.: Harvard University Press, 1991).

those underlying the conceptions above. A regime that is generally effective in solving a well-defined problem (for example, avoiding severe depletions of fish or animal stocks) may seem to many to operate in a manner that is inefficient, inequitable, or both. What is more, a regime that seems effective under current conditions may prove brittle in the face of relatively modest changes in the character of the problem (for instance, the emergence of new entrants or new harvesting technologies). If anything, the link between goal attainment and these performance criteria is even more tenuous. Although the ozone regime may set in motion a process leading relatively quickly to the phasing out of most uses of CFCs, for instance, there is ample room for questioning both the efficiency and the fairness of a process that relies on a (largely) uniform formula calling for equal percentage cuts in the consumption of CFCs. The distinction between evaluative effectiveness and constitutive effectiveness is even more dramatic. A regime is effective in the constitutive sense when it gives rise to a social practice that becomes a major focus of attention for its members. There is nothing in this conception that requires a strong performance with regard to criteria of efficiency and equity.

So far, I have taken pains not only to differentiate several dimensions of effectiveness but also to show that there is no basis for assuming that the different dimensions will co-vary in any simple or easily predictable manner. Yet this does not preclude the occurrence of interaction effects among the various dimensions in the sense that developments in some areas have discernible impacts on developments in others. Perhaps the most important of these interaction effects for scholars and practitioners interested in international environmental regimes are those involving causal links between effectiveness as problem solving on the one hand and effectiveness as goal attainment and process effectiveness on the other. For the most part, actors in international society are motivated to form regimes as a response to the emergence of more or less acute problems such as the progressive depletion of commercially valuable fish stocks, the realization that species playing central roles in important ecosystems may go extinct, or the anticipated consequences of a serious thinning of the protective layer of stratospheric ozone. In endeavoring to solve these problems, however, actors ordinarily specify goals (for example, a 30 percent reduction in sulfur dioxide emissions or a phase-out of the production of CFCs) and then devise sets of rules and policy

Effectiveness

instruments intended to bring behavior into line with the attainment of these goals. No doubt, such responses can and sometimes do serve to solve the problems that provoke them. But there is no guarantee that this will be the case. A 30 percent reduction in sulfur dioxide emissions may accompany or even cause a rise in emissions of other substances that are equally disruptive to the natural environment. Irreparable damage to the ozone layer may occur before the consumption of CFCs ceases. Though the emphasis that students of effectiveness place on implementation and compliance is perfectly understandable, therefore, the results should not be treated as a substitute for undertaking the more challenging task of investigating such matters as the causal links between process effectiveness and effectiveness as problem solving.

Whatever their effectiveness in the realm of intended consequences, international regimes—like all other governance systems—also produce side effects, results that their creators neither intend nor foresee at the time of their establishment. Sometimes side effects take the form of unforeseen distributive consequences as in the case of windfall profits accruing to those who receive tradable pollution rights or permits in an initial distribution or to those in possession of stocks of tradable goods following a decision to phase out future production. In other cases, side effects involve the operation of an institutional arrangement itself as in the case of the unforeseen capture of a regulatory system by those it is intended to regulate. Given the recent rise in levels of interdependence in international society, it is to be expected that side effects will become more ubiquitous in connection with the operation of international regimes and that these effects will often initiate chain reactions of considerable magnitude. As in other realms, there is an understandable tendency to focus on negative side effects in thinking about the unintended consequences flowing from the establishment and operation of international regimes. Yet these side effects clearly constitute a subset of the broader category of externalities, which suggests that we should be open to the prospect of positive as well as negative side effects. Both those responsible for designing international regimes and those seeking to provide overall assessments of their performance will surely want to be alert to the prospect of significant side effects. In individual cases, the impact of the relevant side effects may equal or even exceed the magnitude of the intended effects attributable to the operation of

international regimes, a fact that should give pause to regime enthusiasts who advocate the creation of new institutions as a solution to every problem.[11]

DETERMINANTS OF EFFECTIVENESS

No doubt, our conceptions of effectiveness will continue to evolve as we conduct studies of the workings of specific international environmental regimes. But it is appropriate, at this stage, to turn to the other side of the equation, initiating an inquiry into the factors that operate as determinants of the effectiveness of governance systems in international society. The principal issue here centers on the tension between parsimony and explanatory power. Single-factor accounts are appealing both because they lend themselves to articulation in the form of necessary or sufficient conditions and because they hold the promise of reducing seemingly complex realities to a set of relatively simple and comprehensible propositions. In the social sciences, however, such accounts seldom fare well when they are tested against evidence derived from empirical observations. As a result, analysts typically find themselves fashioning explanatory accounts that include two or more independent variables and seeking to specify the relationships obtaining between or among these variables. There is no reason to expect studies of the determinants of institutional effectiveness to prove exceptional. Even so, differentiation of the types or categories of independent variables will provide a helpful backdrop for the growing body of case studies carried out by scholars working in this field.

One approach to this issue that will appeal to practitioners turns on the distinction between decision variables and structural variables. Decision variables are factors subject to conscious control or manipulation on the part of those responsible for designing and managing international regimes. The institutional arrangements embedded in governance systems (for example, their membership, decision-making procedures, and compliance mechanisms) belong to this category. Structural variables are features of the larger physical, biological, or

[11] Individual regimes also become components of larger systems of institutional arrangements or orders whose effects may prove highly significant at the macro level. Consider, for example, the macroeconomic argument articulated in Douglass C. North and Robert P. Thomas, *The Rise of the Western World: A New Economic History* (Cambridge, Eng.: Cambridge University Press, 1973).

social environment (for example, the distribution of power in international society) that are not subject to conscious control within any policy-relevant time frame. The study of decision variables holds an obvious attraction for those interested in the effectiveness of international regimes because it is easy to see ways to apply the findings of such research both to the management of existing institutions and to the design of new governance systems. Yet a note of caution is in order here. International governance systems are, for the most part, complex social institutions whose operation is not well understood. Nothing is more common than the establishment of regimes that prove ineffective in practice because they are based on premises that are either wrong or not applicable to the situation at hand.[12] By the same token, studies of structural determinants of effectiveness are by no means irrelevant from the point of view of those charged with establishing or managing international regimes. Practitioners who understand the key structural factors will surely have an advantage when creating regimes that are well-adapted to the environment in which they are expected to operate.

For analytic purposes, however, there is much to be said for a related distinction that separates endogenous variables, exogenous variables, and what I call linkage variables. Those who focus on endogenous variables seek to account for variations in the effectiveness of international governance systems by examining the character of the institutional arrangements themselves. The category of exogenous variables, by contrast, encompasses an array of physical, biological, and social conditions that make up the environment in which an international regime operates. Linkage variables have to do with the fit between the institutional character of a governance system and the environment in which it is expected to function.

Endogenous Variables

There is, to begin with, a debate concerning the extent to which international regimes require the services of organizations (in the sense of material entities possessing offices, personnel, equipment, budgets, and legal personality) to function effectively. Those who approach the issue from the perspective of business administration or

[12] Underdal, "Negotiating Effective Solutions"; and Oran R. Young, *International Cooperation: Building Regimes for Natural Resources and the Environment* (Ithaca: Cornell University Press, 1989), chap. 9.

public administration, whose primary concern is the performance of organizations, exhibit a tendency to shift the focus of analysis from the effectiveness of international regimes to the effectiveness of international organizations.[13] This is, in my view, a mistake. With all due respect for the roles organizations play, there is great variation among international governance systems in the extent to which their operation requires the services of some administrative apparatus, and there is no obvious correlation between the presence of organizations and the effectiveness of regimes. As numerous observers have pointed out, moreover, both material and intangible costs are associated with the operation of organizations, which suggests the value of a close examination of the factors that determine when and what sort of organizations are required to make international regimes effective.

Quite apart from the matter of organization, there is much to be said for studies of decision procedures, revenue sources, and compliance mechanisms in efforts to pinpoint the determinants of institutional effectiveness in international society.[14] In the case of decision procedures, the problem is to devise some process that makes it possible to avoid the twin pitfalls of paralysis and defection. Ingenious devices, such as the International Whaling Commission's procedure of combining majority rule with a system of individual objections, are surely worthy of study in this connection. The fundamental question regarding revenue sources, concerns the extent to which a regime is able to obtain revenue directly rather than via some pass-through arrangement under which members make periodic contributions. The controversy surrounding efforts to create independent revenue sources in specific cases, such as the proposed International Seabed Authority, indicates how sensitive this issue is. With regard to compliance, the problem centers on the need to secure compliant behavior on the part of a regime's members in a social setting in which enforcement capabilities are largely under the control of the members themselves. Recently, this issue has given rise to interesting work both on the idea of transparency (that is, the formulation of rules in such a way as to facilitate efforts to observe or measure compliance) and on

[13] Much of the debate in recent years regarding the reform of the United Nations System reflects this way of thinking. For a recent review touching on a wide range of proposed reforms in the various components of the United Nations System see Johan Kaufman and Nico Schrijver, *Changing Global Needs: Expanding Roles for the United Nations System* (Hanover, N.H.: Academic Council on the United Nations System, 1990).

[14] For a particularly sophisticated account of this type see Sand, *Lessons Learned in Global Environmental Governance*, Part II.

Effectiveness

the use of sophisticated technologies to monitor compliance on the part of individual members in a nonintrusive manner.[15]

The growing awareness that change is one of the dominant characteristics of today's world has led also to an increasing concern for robustness and, more specifically, for adaptability or flexibility among those who think about the effectiveness of international regimes. The idea here is that a regime cannot remain effective for long unless it has some built-in capacity to adjust to changes in the issue area to which it pertains or the behavior it is designed to regulate. Because authority is decentralized in international society, there is no simple way to solve the problem of building flexibility into regimes. Yet ingenious responses to this problem have been developed in some cases. Allowing for the accession of new members (as in the cases of the whaling regime and the Antarctic Treaty regime), for example, can bring about changes in the functioning of a regime without requiring any formal alterations in its constitutive provisions. Providing for changes in the schedule of the whaling regime and the appendixes of the CITES regime without requiring formal ratification has had the effect of introducing considerable flexibility into these governance systems. Equally interesting is the process now emerging in connection with the ozone regime in which the annual review conferences, held under the auspices of the arrangements set forth in the Montreal Protocol, are empowered to make significant changes in the workings of the regime that do not require ratification.[16]

Exogenous Variables

The category of exogenous variables thought to have a bearing on the effectiveness of international regimes covers a wider array of factors than the category of endogenous variables. Whereas endogenous factors are limited, by definition, to attributes or properties of

[15] Recent work on compliance with international environmental agreements is reviewed in Jesse H. Ausubel and David G. Victor, "Verification of International Environmental Agreements," *Annual Review of Energy and Environment* 17 (1992), 1–43.

[16] Thus the review conferences can accelerate the phase-out schedule for chemicals already covered by the regime without ratification. The addition of new chemicals to the category of those to be phased out, on the other hand, does require ratification by the regime's members. At the 1990 meeting in London, for example, the parties agreed to shorten the phase-out period for a number of CFCs without triggering a requirement for ratification. They also decided to expand the scope of the regime to cover additional chemicals (for instance, carbon tetrachloride), an action requiring ratification by the members.

the regimes themselves, exogenous variables may range across the full spectrum of driving forces that analysts expect to influence the course of collective outcomes in international society. Thus, not surprisingly, a broad range of factors must be considered by those endeavoring to account for variations in the effectiveness of regimes. Yet these factors do divide into several major clusters associated with different schools of thought about the forces at work in international relations more generally. Three of these clusters, in particular, seem noteworthy as guides to our thinking about the determinants of institutional effectiveness: power factors, interest factors, and knowledge factors.

Those who call themselves realists or structuralists approach institutions as reflections of the underlying configuration of power in international society.[17] This way of thinking may seem most familiar in connection with discussions of regime formation, but it applies just as well to analyses of the effectiveness of governance systems. A particularly prominent strand of this reasoning involves hegemonic stability theory, which suggests that the presence of a hegemon in the sense of a dominant actor or a party possessing a preponderance of material resources is necessary for a regime to function effectively.[18] The decline or fall of the relevant hegemon, on this account, is likely to lead inexorably to a reduction of the regime's effectiveness and, in extreme cases, to its transformation. This is, however, not the only power-based argument that is relevant to a discussion of the determinants of regime effectiveness. An alternative view, which is especially interesting because it runs counter to the argument embedded in hegemonic stability theory, suggests that institutions work best or are most effective when they operate in an environment characterized by some rough balance of power among their principal members. A little thought will suggest a number of additional power-based ideas that could prove relevant in analyzing the effectiveness of international governance systems.

Arguments centering on interests rest on a view of international society that emphasizes interactive decision making and collective action among groups of autonomous actors. On this account, regimes

[17] Susan Strange, "*Cave! hic dragones*: A Critique of Regime Analysis," in Stephen D. Krasner, ed., *International Regimes* (Ithaca: Cornell University Press, 1983), 337–354; and Krasner, "Global Communications and National Power: Life on the Pareto Frontier," *World Politics* 43 (April 1991), 336–366.

[18] For a clear exposition see Robert O. Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton: Princeton University Press, 1984), chap. 3.

are social institutions that emerge to circumvent or mitigate the collective-action problems that plague all social settings featuring interactive decision making in the absence of a central public authority or system of rules to guide the behavior of the participants.[19] In thinking about regime effectiveness, those who focus on interests tend to emphasize factors relating to the configuration of interests among the players as well as factors relating to the extent to which institutional arrangements offer appropriate solutions to the relevant collective-action problems. Studies of the configuration of interests highlight not only the locus of a given issue area on the spectrum from pure cooperation (that is, coordination games) to pure conflict (that is, zero-sum games) but also other factors such as the existence of a stable equilibrium.[20] With regard to solutions, the issue concerns the extent to which institutional arrangements are well adapted to the problem at hand, a subject to which I shall return shortly in discussing linkage variables.

Those who look to knowledge in thinking about regime effectiveness rest their case on the proposition that ideas matter independently of configurations of power and interests.[21] Their view, developed in many cases in counterpoint to the arguments of the realists or structuralists, suggests that governance systems—in international society as elsewhere—are reflections of deeper worldviews or intellectual paradigms that structure the way people think about relations among states. On this account, a regime is likely to be effective, in at least some of the senses articulated earlier in this chapter, when it rests on a common conception of the problem to be solved and some degree of consensus regarding what is needed to fashion a solution. A particularly provocative line of thinking in this connection centers on the idea of hegemony in the cognitive or Gramscian sense.[22] The idea here is that a system of thought, which may or may not be an outgrowth of the views of an actor that is a hegemon in the material sense, can hold sway over the thinking of policymakers in many dif-

Young, *International Cooperation*.

[20] An equilibrium is stable to the extent that a system tends to revert to that condition in the aftermath of displacements or perturbations.

[21] For extended accounts of the role of ideas in the operation of international institutions see Ernst B. Haas, *When Knowledge Is Power: Three Models of Change in International Organizations* (Berkeley: University of California Press, 1990); and Peter M. Haas, ed., *Knowledge, Power, and International Policy Coordination*, a special issue of *International Organization* 46 (Winter 1992).

[22] Robert W. Cox, "Gramsci, Hegemony and International Relations: An Essay in Method," *Millennium: Journal of International Studies* 12 (Summer 1983), 162–175.

ferent national settings and that the presence of some such cognitive construct is critical to the success or failure of international regimes created to cope with specific problems. Yet there is no reason to confine our thinking about knowledge as a source of effectiveness to such a grand theory. It may well be that more mundane considerations regarding knowledge are relevant as well in efforts to explain variations in observed levels of institutional effectiveness.

Linkage Variables

Some students of international regimes have suggested that effectiveness depends on the difficulty or the "malignness" of the problem an institutional arrangement is intended to solve.[23] This intuitively appealing idea rests on the assumption that we can rank problems from those that are easiest to solve or most benign to those that are most difficult to solve or most malign. So, for example, coordination problems, which require only some adjustment of behavior to avoid common aversions, seem easier to solve than cooperation problems, which require both active collaboration and some mechanism for ensuring compliance to produce some valued products.[24] On reflection, however, it is by no means clear how far this line of reasoning can carry us in explaining or predicting levels of effectiveness. The idea of difficulty, in the hands of many, is a measure of the intensity of the conflicts of interest among those engaged in interactive decision making. To the extent that this is the case, the argument might better be left to interest-based thinking, which offers more sophisticated analytic tools than the simple notion of difficulty. Approached from another angle, regimes involve efforts to solve problems that are hard to classify on a scale of difficulty, except in very gross terms. In all but the simplest of situations, in fact, the degree of difficulty of the problem to be solved is likely to become a subject of lively debate rather than something to be treated as an objective condition. The current controversy over the extent to which the problem of climate change is

[23] The term *malignness* originated with Steinar Andreson and Jorgen Wettestad of the Fridtjof Nansen Institute in Oslo. For a discussion that relies on a typology of conflicts to make a similar point see Volker Rittberger and Michael Zurn, "Regime Theory: Findings from the Study of 'East-West Regimes,'" *Conflict and Cooperation* 26 (1991), 165–183.

[24] In this connection, see also the distinction between common aversions and common interests in Arthur A. Stein, "Coordination and Collaboration: Regimes in an Anarchic World," in Krasner, ed., *International Regimes*, 115–140.

more difficult to solve than the problem of ozone depletion illustrates this point aptly.[25]

Effectiveness

Another approach to this general topic, which captures some of what is at stake in the discussion of difficulty, focuses on the fit between the character of an international regime and the problem it is intended to solve. Whereas some problems (for example, the conservation of polar bears) can be solved through the elaboration of coordination regimes featuring common rules coupled with decentralized administration, other problems (for example, the setting and allocation of catch quotas for krill in the Southern Ocean or the allocation of broadcast frequencies in the electromagnetic spectrum) can be solved only through the establishment of some social choice mechanism capable of making collective decisions on a continuing or recurrent basis. Regimes for high seas fisheries, in which it is relatively hard to monitor compliance with specific regulations, pose different requirements than regimes for nuclear safety, in which it is virtually impossible to hide serious accidents. Governance systems that work well when the members are modern states with strong central governments frequently fail when the governments of the participating states have a more limited capacity to control what goes on within their own jurisdictions (for example, the activities of poachers engaged in practices banned under the terms of the CITES regime). Similarly, the need for built-in flexibility is greater with regard to problems in which scientific understanding is changing rapidly (for example, ozone depletion or climate change) than for problems whose levels of uncertainty are much lower (for example, regimes to allocate the flow of water in shared river basins).

Overall, there is much to be said for the view that the ability to customize the provisions of a regime to fit the circumstances at hand constitutes an important determinant of institutional effectiveness. This is, of course, easier said than done. Not only is it difficult to foresee how complex institutional arrangements will work in practice, but also individual participants are subject to continual pressure both from incentives to capture short-term gains to the detriment of longer-term considerations relating to institutional effectiveness and from the maneuvers of those endeavoring to protect special interests in a way that detracts from regime performance. Then, too, there is the problem of making appropriate adjustments over time. Institu-

[25] See, for example, Jessica T. Mathews et al., *Greenhouse Warming: Negotiating a Global Regime* (Washington, D.C.: World Resources Institute, 1991).

tions are like relationships among individuals; they require continuous monitoring and adjustments to remain viable. It is not sufficient simply to wind them up and set them in motion on the assumption that they will adjust to changing circumstances on their own in the absence of conscious interventions. It follows that any clear-cut conclusions we are able to reach about linkages between endogenous factors in the sense of attributes or properties of the regimes themselves and exogenous factors in the sense of features of the physical, biological, and social environment should prove directly relevant to the search for effectiveness in the establishment and management of a wide range of governance systems in international society.

CONCLUSION

Effectiveness, it is clear, is not a simple matter when we are assessing the consequences of international environmental governance systems. Not only is it possible to conceptualize effectiveness in different ways, but it is also common to look to a variety of factors in efforts to explain the levels of effectiveness attained by specific regimes. What is more, much of the variance in our thinking about effectiveness is surely attributable to the disciplinary perspectives and larger worldviews that we as analysts bring to the study of this subject. Thus it will come as no surprise that our understanding of the determinants of effectiveness in international governance systems is rudimentary at this stage. Nonetheless, the effort to improve knowledge of this complex subject must be placed at the top of the agenda for students of international governance. The study of governance systems in international society cannot prosper in the absence of a better understanding of the determinants of effectiveness. Those responsible for designing governance systems to cope with growing threats to the earth's habitability demand knowledge that they can use to devise regimes that will prove effective. It is time, therefore, to get on with the task of studying effectiveness in a systematic and empirically grounded fashion.