

# Coordination and Collaboration: Regimes in an Anarchic World

Arthur A. Stein

Abstract:

The study of regimes can contribute to our understanding of international politics only if regimes represent more than international organizations and less than all international relations. The conceptualization of regimes developed here accepts the realist image of international politics, in which autonomous self-interested states interact in an anarchic environment. Yet there are situations in which rational actors have an incentive to eschew unconstrained independent decision making, situations in which individualistic self-interested calculation leads them to prefer joint decision making (regimes) because independent self-interested behavior can result in undesirable or suboptimal outcomes. These situations are labeled dilemmas of common interests and dilemmas of common aversions. To deal with these, states must collaborate with one another or coordinate their behavior, respectively. Thus there are different bases for regimes, which give rise to regimes with different characteristics. Coordination is self-enforcing and can be reached through the use of conventions. Collaboration is more formalized and requires mechanisms both to monitor potential cheating and to insure compliance with the regime. The article elucidates the assumptions of such an interest-based approach to regimes, assimilates alternative explanations into this framework, and develops the implications for regime maintenance and change.

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Grappling with the problem of trying to describe and explain patterns of order in the anarchic world of international politics, scholars have fallen into using the term “regime” so disparately and with such little precision that it ranges from an umbrella for all international relations to little more than a synonym for international organizations. This article develops a conceptualization of regimes as serving to circumscribe national behavior and thus to shape international interactions. Because it is theoretically rooted, the formulation can be used to delineate the nature and workings of regimes and to explain why and under what conditions they arise, how they are maintained and transformed, and when they may be expected to break down or dissolve. Further, it helps us understand why there are many different regimes rather than a single overarching one.

At one extreme, regimes are defined so broadly as to constitute either all international relations or all international interactions within a given issue-area. In this sense, an international monetary regime is nothing more than all international relations involving money. Such use of the term regime does no more than signify a disaggregated issue-area approach to the study of international relations and, so defined, “regimes” have no conceptual status; they do not circumscribe normal patterns of international behavior. They do

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no more than delimit the issue domain under discussion. Similarly, a conceptual definition of regimes as, for example, “the rules of the game,” in no way limits the range of international interactions to which it refers. We can, after all, describe even the most anarchic behavior in the international system as guided by the rules of self-interest or self-help.<sup>1</sup> To specify the rules of the international political game is to say that anything and everything goes. If this is all that we mean by regimes, then we have made no conceptual advance by using the term.

At the other extreme, regimes are defined as international institutions. In this sense, they equal the formal rules of behavior specified by the charters or constitutions of such institutions, and the study of regimes becomes the study of international organizations. This formulation reduces the new international political economy to the old study of international organizations and represents nothing more than an attempt to redress a tired and moribund field.

### Anarchy and regimes

The conceptualization of regimes developed here is rooted in the classic characterization of international politics as relations between sovereign entities dedicated to their own self-preservation, ultimately able to depend only on themselves, and prepared to resort to force. Scholars often use anarchy as a metaphor to describe this state of affairs, providing an image of nation-states that consider every option available to them and make their choices independently in order to maximize their own returns. In this view, states are autonomous sovereign entities that “develop their own strategies, chart their own courses, make their own decisions.”<sup>2</sup>

The outcomes that emerge from the interaction of states making independent decisions are a function of their interests and preferences. Depending on these interests, the outcome can range from pure conflict to no conflict at all and, depending on the actors’ preference orderings, may or may not provide a stable equilibrium. Such independent behavior and the outcomes that result from it constitute the workings of normal international politics—not of regimes. An arms race, for example, is not a regime, even

<sup>1</sup> This is the basis of my disagreement with several of the other contributors to this volume. Donald J. Puchala and Raymond F. Hopkins, for example, treat international regimes as coextensive with international politics. Similarly, although Oran Young does not formally equate international politics with regimes, his definitions, both of regimes and of international relations, suggest such an equivalence. Also see his “International Regimes: Problems of Concept Formation,” *World Politics* 32 (April 1980): 331–56, and *Compliance and Public Authority: A Theory with International Applications* (Baltimore: Johns Hopkins University Press, 1979). My concern is to develop a conceptualization of regimes that delineates a subset of international politics.

<sup>2</sup> Kenneth N. Waltz, *Theory of International Politics* (Reading, Mass.: Addison-Wesley, 1979), p. 96.

though each actor's decision is contingent on the other actor's immediately previous decision. As long as international state behavior results from unconstrained and independent decision making, there is no international regime.

A regime exists when the interaction between the parties is not unconstrained or is not based on independent decision making. Domestic society constitutes the most common regime. Even the freest and most open societies do not allow individualism and market forces full play; people are not free to choose from among every conceivable option—their choice set is constrained. The workings of a free market require a developed set of property rights, and economic competition is constrained to exclude predatory behavior.<sup>3</sup> Domestic society, characterized by the agreement of individuals to eschew the use of force in settling disputes, constitutes a regime precisely because it constrains the behavior of its citizens.

Some argue that the advent of complex interdependence in the international arena means that state actions are no longer unconstrained, that the use of force no longer remains a possible option. If the range of choice were indeed this circumscribed, we could, in fact, talk about the existence of an international regime similar to the domestic one. But if the international arena is one in which anything still goes, regimes will arise not because the actors' choices are circumscribed but because the actors eschew independent decision making.<sup>4</sup> International regimes exist when patterned state behavior results from joint rather than independent decision making.

International politics is typically characterized by independent self-interested decision making, and states often have no reason to eschew such individualistic behavior. There is no need for a regime when each state obtains its most preferred outcome by making independent decisions, for there is simply no conflict. Examples include barter and some forms of foreign aid (e.g., disaster relief aid). Figure 1 illustrates one such situation, a case in which actors A and B both agree on a most preferred outcome,  $A_1B_1$ . In addition, both actors have a dominant strategy—a course of action that maximizes an actor's returns no matter what the other chooses. A prefers  $A_1$  whether B chooses  $B_1$  or  $B_2$ , and B prefers  $B_1$  regardless of A's decision. The

<sup>3</sup> On the importance of property rights, see Thomas M. Carroll, David H. Cicil, and Roger K. Chisholm, "The Market as a Commons: An Unconventional View of Property Rights," *Journal of Economic Issues* 13 (June 1979): 605–627. On the constrained sense of economic competition, see J. Hirshleifer, "Competition, Cooperation, and Conflict in Economics and Biology," *American Economic Review* 68 (May 1978): 238–43; and J. Hirshleifer, "Economics From a Biological Viewpoint," *Journal of Law and Economics* 20 (April 1977): 1–52.

<sup>4</sup> The term "complex interdependence" is most fully presented in Robert O. Keohane and Joseph S. Nye, *Power and Interdependence: World Politics in Transition* (Boston: Little, Brown, 1977); yet it remains unclear, for example, if the use of force remains an option in the relations between advanced industrial societies but is dominated by other choices. Alternatively, it may be that nations sometimes prefer to threaten the use of force on a contingent basis, but recognize that the outcome resulting from the mutual *use* of force is the least preferred outcome for all actors.

		ACTOR B	
		B <sub>1</sub> *	B <sub>2</sub>
ACTOR A	A <sub>1</sub> *	4, 4 **	3, 2
	A <sub>2</sub>	1, 3	2, 1

**Figure 1. A no-conflict situation**

In this and all following Figures, cell numerals refer to ordinal ranked preferences: 4 = best, 1 = worst. The first number in each cell refers to A's preference and the second number in each cell refers to B's preference.

\*Actor's dominant strategy

\*\*Equilibrium outcome

result of their independent choices, A<sub>1</sub>B<sub>1</sub>, is an equilibrium outcome, one from which neither actor can shift unilaterally to better its own position.<sup>5</sup> The equilibrium outcome leaves both actors satisfied. Because their interests are naturally harmonious and coincident, there is no conflict. The actors reach what is for both the optimal result from their independent choices.<sup>6</sup> No regime is needed.

There is also no need for a regime when the actors share a most preferred outcome but neither has a dominant strategy. In Figure 2, A prefers A<sub>1</sub> only if B chooses B<sub>1</sub>, and B prefers B<sub>1</sub> only if A chooses A<sub>1</sub>. The equilibrium outcome that emerges, A<sub>1</sub>B<sub>1</sub>, leaves both satisfied. There is, however, a second equilibrium outcome possible in this case, one that emerges from each actor's desire to maximize its minimum gain. Such a minimax decision rule would lead A to choose A<sub>2</sub> and B to choose B<sub>2</sub>, the courses of action that would assure that, at the very least, they avoid their worst outcomes. Yet

<sup>5</sup> The A<sub>1</sub>B<sub>1</sub> outcome is also a coordination equilibrium, which David K. Lewis defines as an outcome from which neither actor can shift and make *anyone* better off; see *Convention: A Philosophical Study* (Cambridge: Harvard University Press, 1969), p. 14.

<sup>6</sup> Individual accessibility is discussed by Jon Elster in *Ulysses and the Sirens: Studies in Rationality and Irrationality* (Cambridge: Cambridge University Press, 1979), p. 21.

		ACTOR B	
		B <sub>1</sub>	B <sub>2</sub>
ACTOR A	A <sub>1</sub>	4, 4**	1, 3
	A <sub>2</sub>	3, 1	2, 2**

**Figure 2. The assurance game**

\*\*Equilibrium outcome

the A<sub>2</sub>B<sub>2</sub> outcome, although an equilibrium one, is mutually undesirable.<sup>7</sup> Thus, as long as both actors are aware of the other's preferences, they will converge on the A<sub>1</sub>B<sub>1</sub> outcome that both most prefer. No regime is needed since both actors agree on a most preferred outcome, one that they can reach by acting autonomously.<sup>8</sup>

<sup>7</sup> Only A<sub>1</sub>B<sub>1</sub>, however, is a coordination equilibrium. The other equilibrium outcome, A<sub>2</sub>B<sub>2</sub>, is not a coordination equilibrium because each actor can shift from it and make the other better off by doing so. For Lewis this does not pose a coordination problem, which requires the existence of two or more coordination equilibria; see *Convention*, p. 24.

<sup>8</sup> For Elster, this case is individually inaccessible. Nonetheless, he expects convergence because the outcome is individually stable. I consider this case to be individually accessible precisely because there are convergent expectations. Note that if regimes are understood to include any devices that help actor expectations to converge, then regimes might arise even in this case, although solely to provide information. The proffered information would provide each actor with assurance about the others' preferences, as would be necessary for expectations to converge on the one of the two equilibria that all prefer.

I find a problem with Robert O. Keohane's treatment of the role of information in his article in this volume. He argues that, given a demand for international agreements, the more costly the information the greater the actual demand for international regimes (one of whose functions is to improve the information available to actors). It is unclear whether he means to suggest that all mechanisms which provide information are examples of regimes even when the actors' interests are harmonious, or that they are not regimes because there is no demand for agreements in such cases. Since he presents the demand for agreements as a given in his formulation, we do not know if the demand for information can be a basis for a demand for agreements or simply a basis for a demand for regimes which assumes a demand for agreements. His formulation is too imprecise to adduce the standing of assurance mechanisms and whether they do or do not constitute regimes.

The international extradition of criminals is an example of such an “assurance game.” States began in the early nineteenth century unilaterally to adopt statutes stipulating extraditable offenses. Some states, such as the Federal Republic of Germany, are satisfied with assurances of reciprocity before they agree to extradite criminal fugitives. Other states, however, are unsatisfied with such informal arrangements because of the potential limitations that other nations may place on extradition. They require treaties to provide them with assurances that the other state will behave in a predictable fashion when questions of extradition arise.<sup>9</sup> It is important to understand, however, that these treaties only provide assurances and no more.

Nor will a regime arise when some actors obtain their most preferred outcome while others are left aggrieved. Figure 3 illustrates a situation in which both actors have dominant strategies leading to an equilibrium that is actor A’s most preferred outcome but actor B’s second-worst one. In such situations, the satisfied actors have no reason to eschew independent decision making and the aggrieved actors would only succeed in making themselves still worse off by being the only ones to forgo rational self-interested calculation. Voluntary export restraint is an example in which one actor gets its most preferred outcome while the other is left aggrieved by that equilibrium result.

In the foregoing examples, behavior and outcome result from the independent decisions of actors interacting in a context, prototypical of international relations, characterized by anarchy. There are situations, however, in which all the actors have an incentive to eschew independent decision making: situations, that is, in which individualistic self-interested calculation leads them to prefer joint decision making because independent self-interested behavior can result in undesirable or suboptimal outcomes. I refer to these situations as dilemmas of common interests and dilemmas of common aversions.<sup>10</sup>

### *Dilemmas of common interests*

The dilemma of common interests arises when independent decision making leads to equilibrium outcomes that are Pareto-deficient—outcomes in which all actors prefer another given outcome to the equilibrium outcome. The classic example is, of course, the prisoners’ dilemma, in which the actors’ dominant strategies lead them to an equilibrium outcome that is

<sup>9</sup> In some cases, actors may require mechanisms for assurance, which extradition treaties exemplify. These treaties might thus be seen as “assurance regimes,” regimes that arise when each actor’s knowledge of others’ preferences is enough to allow the actors’ autonomous decisions to bring them to the outcome they all most prefer.

<sup>10</sup> The conceptualization of regimes presented here, that they arise to deal with the dilemmas of common interests and common aversions, is not, therefore, based on any inherent notion of “principles.” Indeed, it is easy to conceive of unprincipled regimes, such as OPEC. Regimes may, but need not, have some principle underlying them.

		ACTOR B	
		B <sub>1</sub> *	B <sub>2</sub>
ACTOR A	A <sub>1</sub> *	4, 2**	3, 1
	A <sub>2</sub>	2, 4	1, 3

**Figure 3. An equilibrium outcome that leaves one actor aggrieved**

\*Actor's dominant strategy

\*\*Equilibrium outcome

Pareto-deficient. There is an alternative outcome that both actors prefer to the equilibrium one. Figure 4 illustrates the two-actor prisoners' dilemma in which both actors prefer the A<sub>1</sub>B<sub>1</sub> outcome to the A<sub>2</sub>B<sub>2</sub> equilibrium. But the preferred A<sub>1</sub>B<sub>1</sub> outcome is neither individually accessible nor stable. To arrive at the Pareto-optimal outcome requires that all actors eschew their dominant strategy. In addition, they must not greedily attempt to obtain their most preferred outcome once they have settled at the unstable outcome they prefer to the stable equilibrium.<sup>11</sup>

The prisoners' dilemma is used as an allegory for a variety of situations. It is, for instance, the classic illustration of the failure of market forces always to result in optimal solutions—that is, of market rationality leading to suboptimal outcomes. Oligopolists, for example, prefer collusion to the deficient equilibrium that results from their competition.<sup>12</sup> Ironically, gov-

<sup>11</sup> The prisoners' dilemma is the only two-actor example of a Pareto-deficient equilibrium that occurs when both actors have dominant strategies. It is for this reason that it has received so much scholarly attention.

<sup>12</sup> The role of game models in analyzing oligopolistic relations is described by Jesse W. Markham, "Oligopoly," in *International Encyclopedia of the Social Sciences*, vol. 11 (New York: Macmillan, 1968): 283–88. F.M. Scherer discusses the prisoners' dilemma as a model for oligopolistic interaction in *Industrial Market Structure and Economic Performance* (Chicago: Rand McNally, 1970). The same observation is made by Lester G. Telser, who reduces the prisoners' dilemma as it applies to oligopolies the "cartel's dilemma"; see *Competition, Collusion, and Game Theory* (Chicago: Aldine-Atherton, 1972), p. 143.

		ACTOR B	
		B <sub>1</sub>	B <sub>2</sub> *
ACTOR A	A <sub>1</sub>	3, 3	1, 4
	A <sub>2</sub> *	4, 1	2, 2**

**Figure 4. Prisoners' dilemma**

\*Actor's dominant strategy

\*\*Equilibrium outcome

ernment intervenes in order to prevent collusion and enforce the outcome that is suboptimal for the oligopolists. There are other situations of suboptimality, such as problems of collective goods and externalities, that also require government intervention to insure collusion and collaboration and thus to insure avoidance of the suboptimal equilibrium outcome.<sup>13</sup>

Political theorists use the prisoners' dilemma to explain the contractarian-coercion conjunction at the root of the modern state, arguing that the state of nature is a prisoners' dilemma in which individuals have a dominant strategy of defecting from common action but in which the result of this mutual defection is deficient for all. Yet the outcome that results from mutual cooperation is not an equilibrium one since each actor can make itself immediately better off by cheating. It is for this reason, political theorists argue, that individuals came together to form the state by agreeing to coerce one another and thus insure the optimal outcome of mutual cooperation. In other words, they agreed to coerce one another in order to guarantee that no individual would take advantage of another's cooperation by defecting from the pact and refusing to cooperate. States are thus coercive institutions that allow individuals to eschew their dominant strategies—an individual actor's

<sup>13</sup> For a general discussion of suboptimality, see Jon Elster, *Logic and Society: Contradictions and Possible Worlds* (New York: Wiley, 1978), pp. 122–34.

rational course—as a matter of self-interest in order to insure an optimal rather than a Pareto-deficient equilibrium outcome.<sup>14</sup>

Put more simply, the argument is that individuals come together to form the state in order to solve the dilemma of common interests. The existence of a prisoners' dilemma preference ordering creates the likelihood that individual rationality will lead to suboptimal outcomes, a classic case of market failure. Individuals have a common interest in constraining the free rein of their individuality and independent rationality and form domestic political regimes to deal with the problem.

This view of the state is reinforced by the literature on collective goods, in which scholars argue that the suboptimal provision of collective goods stems from the individual's incentive to be a free rider, to enjoy the benefits of goods characterized by nonexcludability. Under certain conditions, the problem of collective goods is a classic prisoners' dilemma in which each individual is better off not contributing to the provision of a collective good, but in which the equilibrium outcome of everyone's deciding to be a free rider is a world in which all are worse off than if they had contributed equally to the provision of the good.<sup>15</sup> Some in fact argue that the state is formed to assure the provision of collective goods; the state coerces contributions from all individuals, each of whom would rather be a free rider but goes along because of the guarantee that all others will be similarly coerced. They form the state because the alternative outcome is a Pareto-deficient world in which collective goods are not provided. The most basic collective good provided by the state is, of course, security from outside attack. Thus, we have an explanation for the rise of states that also illuminates the anarchic character of relations between these states. The anarchy that engenders state formation is tamed only within domestic society. Individuals sacrifice a certain degree of autonomy—but the newly established nations do not do so. A world of vying individuals is replaced by a world of vying nations.

Regimes in the international arena are also created to deal with the collective suboptimality that can emerge from individual behavior.<sup>16</sup> There are,

<sup>14</sup> In one formulation, Jon Elster defines politics as "the study of ways of transcending the Prisoner's Dilemma"; see "Some Conceptual Problems in Political Theory," in *Power and Political Theory: Some European Perspectives*, ed. by Brian Barry (London: Wiley, 1976), pp. 248–49. Laurence S. Moss provides an assessment of modern and somewhat formal equivalents to the Hobbesian and Lockean views of state formation in "Optimal Jurisdictions and the Economic Theory of the State: Or, Anarchy and One-world Government Are Only Corner Solutions," *Public Choice* 35 (1980): 17–26. See also Michael Taylor, *Anarchy and Cooperation* (London: Wiley, 1976). Elster criticizes Taylor's alternative in *Logic and Society*, pp. 156–57, and *Ulysses and the Sirens*, pp. 64, 143, 146.

<sup>15</sup> Russell Hardin, "Collective Action as an Agreeable n-Prisoners' Dilemma," *Behavioral Science* 16 (September 1971): 472–81. Note Elster's distinction between counterfactual and suboptimality in explaining the behavior of free riders; *Logic and Society*, pp. 122–23.

<sup>16</sup> The dilemmas discussed in this article refer to specific actors and not necessarily to the system as a whole. In the prisoners' dilemma, for example, only the prisoners themselves face a Pareto-deficient outcome. The rest of society finds the outcome of their dilemma to be optimal. This is precisely analogous to the situation of oligopolists, who prefer collusion to competition. The rest of society, however, would prefer that they compete rather than collude. The collective suboptimality need not necessarily exist for all actors in the system.

for example, international collective goods whose optimal provision can only be assured if states eschew the independent decision making that would otherwise lead them to be free riders and would ultimately result in either the suboptimal provision or the nonprovision of the collective good. One such problem of international politics, that of collective security, was, in fact, the focus of some of the earliest studies of collective goods.<sup>17</sup>

Collective goods issues are not the only problems characterized by prisoners' dilemma preferences for which international regimes can provide a solution. The attempt to create an international trade regime after World War II was, for example, a reaction to the results of the beggar-thy-neighbor policies of the depression years. All nations would be wealthier in a world that allows goods to move unfettered across national borders. Yet any single nation, or group of nations, could improve its position by cheating—erecting trade barriers and restricting imports.<sup>18</sup> The state's position remains improved only as long as other nations do not respond in kind. Such a response is, however, the natural course for those other nations. When all nations pursue their dominant strategies and erect trade barriers, however, they can engender the collapse of international trade and depress all national incomes. That is what happened in the 1930s, and what nations wanted to avoid after World War II.<sup>19</sup>

<sup>17</sup> This literature was spawned by Mancur Olson Jr. and Richard Zeckhauser, "An Economic Theory of Alliances," *Review of Economics and Statistics* 48 (August 1966): 266–79. Other essays linking collective goods and international cooperation include Bruce M. Russett and John D. Sullivan, "Collective Goods and International Organization," *International Organization* 25 (Autumn 1971): 845–65; John Gerard Ruggie, "Collective Goods and Future International Collaboration," *American Political Science Review* 66 (September 1972): 874–93; and Todd Sandler and Jon Cauley, "The Design of Supranational Structures: An Economic Perspective," *International Studies Quarterly* 21 (June 1977): 251–76. More recent work stresses different institutional arrangements for international collective goods. See Todd M. Sandler, William Loehr, and Jon T. Cauley, "The Political Economy of Public Goods and International Cooperation," *Monograph Series in World Affairs* 15 (1978), and Duncan Snidal, "Public Goods, Property Rights, and Political Organizations," *International Studies Quarterly* 23 (December 1979): 532–66.

<sup>18</sup> Indeed, international trade regimes have historically exemplified the subsystemic character of many regimes. Scholars often characterize the mid 19th century, for example, as the era of free trade. Yet several major states, including the United States and Russia, did not take part. Similarly, the post-1945 era is now commonly referred to as the period of American economic hegemony. Ironically, this characterization is of a postwar economic system established by and within the sphere of only one pole of a bipolar international system—a bipolarity that has typically been offered as the most important characterization of the age. In other words, we should continually be reminded that references to "the" postwar economic system are, in fact, to a subsystem that excludes the Soviet bloc. See Arthur A. Stein, "The Hegemon's Dilemma: Great Britain, the United States, and the International Economic Order," paper presented at the annual meeting of the American Political Science Association, New York, 4 September 1981.

<sup>19</sup> A similar argument can sometimes be made about the decision to devalue a currency or maintain par value in a fixed exchange rate system when devaluation, although every nation's dominant strategy, results in the suboptimal outcome of mutual devaluation. Richard N. Cooper uses simple games in his discussion of the choice of an international monetary regime; see "Prolegomena to the Choice of an International Monetary System," *International Organization* 29 (Winter 1975): 63–97.

*Dilemmas of common aversions*

Regimes also provide solutions to dilemmas of common aversions. Unlike dilemmas of common interests, in which the actors have a common interest in *insuring* a particular outcome, the actors caught in the dilemma of common aversions have a common interest in *avoiding* a particular outcome. These situations occur when actors with contingent strategies do not most prefer the same outcome but do agree that there is at least one outcome that all want to avoid. These criteria define a set of situations with multiple equilibria (two equilibria if there are only two actors each with two choices) in which coordination is required if the actors are to avoid that least preferred outcome.<sup>20</sup> Thus, these dilemmas can also lead to the formation of regimes by providing the incentive for nations to eschew independent decision making.

Figure 5 provides one example of a dilemma of common aversions. Neither actor in this situation has a dominant strategy; nor does either most prefer a single given outcome. Rather, there exist two outcomes that both value equally and two outcomes that both wish to avoid. Thus, the situation has two equilibria,  $A_1B_1$  and  $A_2B_2$ , but since the actors have contingent strategies, they cannot be certain that they will arrive at one of these outcomes if they act independently and simultaneously. Without coordination they may well end up with one of the outcomes that neither wants.<sup>21</sup>

This example of common aversions is relatively easy to deal with because the actors do not have divergent interests; neither cares which of the two equilibria emerges. Any procedure that allows for a convergence of their expectations makes coordination possible by allowing the actors to arrive at one of the equilibria. It is in such situations that conventions play an important role. Driving on the right is a simple coordination mechanism that allows for the smooth movement of traffic in opposite directions without collisions and bottlenecks. It is an arbitrary convention that allows actors' expectations to converge on one of the equilibrium outcomes. The alternative convention of driving on the left permits coordination by convergence on the other equilibrium. The actors are indifferent between the two equilibria.

There are times, however, when, although both still agree on the least preferable outcome or outcomes, each prefers a different one of the possible equilibria. In Figure 6, for example, there are two equilibria ( $A_2B_1$  and  $A_1B_2$ ), both of which the actors prefer to either of the other possible outcomes.

<sup>20</sup> In the dilemma of common interests, actors are averse to the suboptimal equilibrium outcome and resolution involves their arriving at the outcome they prefer to the equilibrium one. The dilemma is their inability individually to arrive at the outcome they prefer to the equilibrium one. In the dilemma of common aversions, on the other hand, the actors do have a common interest in avoiding a particular outcome but their dilemma is the possibility that they might arrive at a mutual aversion without some coordination. Beyond their desire to avoid that aversion, however, they disagree about which of the multiple equilibria they prefer.

<sup>21</sup> Both equilibria are also coordination equilibria. In this case, there is no minimax solution.

		ACTOR B	
		B <sub>1</sub>	B <sub>2</sub>
ACTOR A	A <sub>1</sub>	1, 1**	0, 0
	A <sub>2</sub>	0, 0	1, 1**

**Figure 5. Dilemma of common aversions and common indifference**

In this example, 1 = most preferred, 0 = least preferred

\*\*Equilibrium outcome

		ACTOR B	
		B <sub>1</sub>	B <sub>2</sub>
ACTOR A	A <sub>1</sub>	2, 2	3, 4**
	A <sub>2</sub>	4, 3**	1, 1

**Figure 6. Dilemma of common aversions and divergent interests**

\*\*Equilibrium outcome

Each does, however, most prefer one of the two equilibria—although they do not most prefer the same one. Actor A prefers  $A_1B_2$ , whereas B favors  $A_2B_1$ .<sup>22</sup>

When actors confront mutual aversions but diverge in their assessments of the equilibria, coordination can be accomplished in two different ways. In either case, the coordination regime establishes rules of behavior that allow actor expectations to converge whenever the dilemma arises. One means of insuring coordination is to specify behavior according to actor characteristics. Alternatively, the prearrangement can specify behavior by context. One example of this dilemma is provided by the simultaneous arrival of a north- or southbound and an east- or westbound car at an intersection. In this case, both drivers most want to avoid a collision. They would also prefer not to sit at their corners staring at one another. There are two ways for them to move through the intersection safely: either A goes first, or B does. The problem is that neither wants to be the one to wait. A coordination rule based on actor characteristics would specify, for example, that Cadillacs drive on while Volkswagens sit and wait. Under such a regime, more likely than not “coordination for the powerful,” the same actor always gets the equilibrium that it prefers. Alternatively, the actors could adopt a contextual rule; one example is the specification that the actor on the right always gets the right of way. In this case, the context determines whether any actor gets its more preferred equilibrium; sometimes it does, and sometimes not. Ideally, this “fairness doctrine” would insure that all actors get their most preferred equilibrium half the time.

### Collaboration and coordination

Regimes arise because actors forgo independent decision making in order to deal with the dilemmas of common interests and common aversions. They do so in their own self-interest, for, in both cases, jointly accessible outcomes are preferable to those that are or might be reached independently. It is in their interests mutually to establish arrangements to shape their subsequent behavior and allow expectations to converge, thus solving the dilemmas of independent decision making.<sup>23</sup> Yet, the need to solve the dilemmas of common interests and aversions provides two different bases

<sup>22</sup> If each of the actors chooses its minimax option, the  $A_1B_1$  outcome results. This outcome is not their mutual aversion, but it is a Pareto-deficient nonequilibrium outcome because both prefer it less than either equilibrium.

<sup>23</sup> Precommitment has been variously described as the power to bind, as imperfect rationality, and as egonomics; see Thomas C. Schelling, *The Strategy of Conflict* (Cambridge: Harvard University Press, 1960), pp. 22–28; Elster, *Ulysses and the Sirens*, pp. 36–111; and T. C. Schelling, “Egonomics, or the Art of Self-Management,” *American Economic Review* 68 (May 1978): 290–94. Such a formulation of prior agreement on principles does not require John Rawls’s veil of ignorance; see *A Theory of Justice* (Cambridge: Harvard University Press, 1971). Thinking ahead without agreement in strategic interaction, however, is no solution; see Frederic Schick, “Some Notes on Thinking Ahead,” *Social Research* 44 (Winter 1977): 786–800.

for international regimes, which helps to explain the differences between regimes that have often confused analysts. Regimes established to deal with the dilemma of common interests differ from those created to solve the dilemma of common aversions. The former require *collaboration*, the latter *coordination*.

The dilemma of common interests occurs when there is only one equilibrium outcome that is deficient for the involved actors. In other words, this dilemma arises when the Pareto-optimal outcome that the actors mutually desire is not an equilibrium outcome. In order to solve such dilemmas and assure the Pareto-optimal outcome, the parties must collaborate, and all regimes intended to deal with dilemmas of common interests must specify strict patterns of behavior and insure that no one cheats.<sup>24</sup> Because each actor requires assurances that the other will also eschew its rational choice, such collaboration requires a degree of formalization. The regime must specify what constitutes cooperation and what constitutes cheating, and each actor must be assured of its own ability to spot others' cheating immediately.

The various SALT agreements provide examples of the institutionalized collaboration required in a regime intended to deal with the dilemma of common interests, for the security dilemma is an example of a prisoners' dilemma situation in which all actors arm themselves even though they prefer mutual disarmament to mutual armament. Yet international disarmament agreements are notoriously problematic. Indeed, the decision to comply

<sup>24</sup> The prisoners' dilemma is the only situation with a Pareto-deficient equilibrium in which all the actors have dominant strategies. There are other cases of Pareto-deficient equilibria in which some have dominant strategies and some contingent strategies. These too are dilemmas of common interests and require regimes for solution; in these cases, however, only those actors with dominant strategies must eschew independent decision making. Thus, the regime formed to insure collaboration in this case is likely to have stipulations and requirements that apply asymmetrically to those who must eschew independent decision making to achieve optimality and to those who must be assured that the others have actually done so and will continue to do so.

Some argue that the cooperative nonequilibrium outcome of the prisoners' dilemma can emerge spontaneously—without collaborative agreement. Social psychologists have done extensive experiments on the emergence of cooperation in repeated plays of the prisoners' dilemma game; the most recent review is by Dean G. Pruitt and Melvin J. Kimmel, "Twenty Years of Experimental Gaming: Critique, Synthesis, and Suggestions for the Future," *Annual Review of Psychology* 28 (1977): 163–92. See also Anatol Rapoport, Melvin J. Guyer, and David G. Gordon, *The 2 × 2 Game* (Ann Arbor: University of Michigan Press, 1976). For a mathematician's deductive assessment of the prospects for the emergence of such cooperation, see Steve Smale, "The Prisoner's Dilemma and Dynamical Systems Associated to Non-Cooperative Games," *Econometrica* 48 (November 1980): 1617–1634. See also Robert Axelrod, "The Emergence of Cooperation Among Egoists," *American Political Science Review* 75 (June 1981): 306–318.

The conditions for this are rarely met in international politics, however. The first such requirement is that play be repeated indefinitely. Because states can disappear, and because they are therefore concerned with their own survival, international politics must be seen as a finite game by the actors. Moreover, the stakes in international politics are typically so high that fear of exploitation will *insure* that states follow their dominant strategy, to defect, in the absence of a collaborative agreement.

with or cheat on an arms control agreement is also a prisoners' dilemma situation in which each actor's dominant strategy is to cheat. Thus, it is not surprising that arms control agreements are highly institutionalized, for these regimes are continually concerned with compliance and policing. They must define cheating quite explicitly, insure that it be observable, and specify verification and monitoring procedures.

Oligopolists also confront the dilemma of common interests, and their collusion represents the collaboration necessary for them to move from the suboptimal equilibrium that would otherwise result. Such collusive arrangements require policing and monitoring because of the individual's incentive to cheat. International market sharing arrangements exemplify this collusive form of collaboration and require the same sort of monitoring provisions. Not surprisingly, such successful market sharing regimes as the International Coffee Agreement have extensive enforcement provisions and elaborate institutional structures for monitoring compliance.<sup>25</sup>

"The tragedy of the commons" exemplifies the dilemma of common interests. The commons were pasture and grazing grounds open to all and the tragedy was the overgrazing that resulted from unrestrained individual use. This is not, as it may seem at first, a dilemma of common aversions in which the actors' least preferred outcome is the depletion of a valuable common resource. Rather, each actor most prefers to be the only user of a common resource, next prefers joint restraint in the mutual use of the good, then prefers joint unrestrained use even if it leads to depletion, and least prefers a situation in which its own restraint is met by the other actors' lack of restraint. Each actor would rather share in such use of the resource that leads to depletion than to see its own restraint allow either the continued existence of the resource for others' use or the disappearance of the resource because the others show no restraint. The actors have a common interest in moving from their suboptimal (but not least preferred) outcome to one in which they exercise mutual restraint by collaboratively managing the resource. The commons thus represent a class of dilemmas of common interests in which individually rational behavior leads to a collectively suboptimal outcome.<sup>26</sup> Current international commons problems, such as the overfishing of a common sea, are all international manifestations of this dilemma of common interests.

By contrast, regimes intended to deal with the dilemma of common aversions need only facilitate coordination. Such situations have multiple equilibria, and these regimes must assure neither a particular outcome nor

<sup>25</sup> Bart S. Fisher, *The International Coffee Agreement: A Study in Coffee Diplomacy* (New York: Praeger, 1972), and Richard B. Bilder, "The International Coffee Agreement: A Case History in Negotiation," *Law and Contemporary Problems* 28 (Spring 1963): 328–91. The latter appeared in a special issue devoted to "International Commodity Agreements."

<sup>26</sup> Garrett Hardin, "The Tragedy of the Commons," *Science* 162 (13 December 1968): 1243–1248; Thomas C. Schelling characterizes the commons as a prisoners' dilemma in *Micromotives and Macrobehavior* (New York: W.W. Norton, 1978), pp. 110–15.

compliance with any particular course of action, for they are created only to insure that particular outcomes be avoided.<sup>27</sup> Nevertheless, such coordination is difficult to achieve when, although both actors least prefer the same outcome, they disagree in the choice of preferred equilibrium. The greater this conflict of interest, the harder it is for them to coordinate their actions. Yet once established, the regime that makes expectations converge and allows the actors to coordinate their actions is self-enforcing; any actor that departs from it hurts only itself.<sup>28</sup> Thus, there is no problem here of policing and compliance. Defections do not represent cheating for immediate self-aggrandizement, but are expressions of relative dissatisfaction with the coordination outcome. An actor will *threaten* to defect before actually doing so; it may choose to go through with its threat only if the other actor does not accede to its demands. Again, such defection is never surreptitious cheating; it is a public attempt, made at some cost, to force the other actor into a different equilibrium outcome. Departures from regime-specified behavior thus represent a fundamentally different problem in coordination regimes than in collaboration ones.

There are many international regimes that serve to facilitate coordination and thus solve the dilemma of common aversions. These solutions provide mechanisms that allow actor expectations to converge on one of the possible equilibria. Conventions alone are adequate in these situations; institutions are not required. Not surprisingly, many involve standardization. The adoption of a common gauge for railroad tracks throughout western Europe is one example.<sup>29</sup>

Traffic conventions are also examples of international regimes.<sup>30</sup> Under the rules of the International Civil Aviation Organization, for example, every

<sup>27</sup> The following authors all discuss coordination, although they do not agree fully on a definition: Schelling, *Strategy of Conflict*; Lewis, *Conventions*; Philip B. Heymann, "The Problem of Coordination: Bargaining and Rules," *Harvard Law Review* 86 (March 1973): 797–877; and Robert E. Goodin, *The Politics of Rational Man* (London: Wiley, 1976), pp. 26–46. The distinction between collaboration and coordination made here can be compared to distinctions between negative and positive *coordination* and between negative and positive *cooperation* made by the following: Marina v. N. Whitman, "Coordination and Management of the International Economy: A Search for Organizing Principles," in *Contemporary Economic Problems 1977*, ed. by William Fellner (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1977), p. 321; and Jacques Pelkmans, "Economic Cooperation Among Western Countries," in *Challenges to Interdependent Economies: The Industrial West in the Coming Decade*, ed. by Robert J. Gordon and Jacques Pelkmans (New York: McGraw-Hill, 1979), pp. 97–123.

<sup>28</sup> This notion of self-enforcement differs from that developed by L.G. Telser, "A Theory of Self-enforcing Agreements," *Journal of Business* 53 (January 1980): 27–44. For Telser, an arrangement is self-enforcing if the actor calculates that defection may bring future costs. Thus, even if cheating brings immediate rewards, an actor will not cheat if others' responses cause it to bear a net loss. For me, regimes are self-enforcing only if the cost that an actor bears for defecting is immediate rather than potential and is brought about by its own defection rather than by the response of others to that defection.

<sup>29</sup> Standardization may reflect harmonious interests rather than coordination solutions to dilemmas of common aversions. This may, for example, explain the adoption of a common calendar.

<sup>30</sup> Schelling provides an interesting discussion of the traffic light as a self-enforcing convention in *Micromotives and Macrobehavior*, pp. 119–21.

flight control center must always have enough English-speakers on duty to direct all those pilots who do not happen to speak the native language of the country whose airspace they happen to be crossing.<sup>31</sup> Communication between ground and aircraft may be in any mutually convenient language, but there must be a guarantee that communication is indeed possible; finding a language matchup cannot be left to chance. Thus, English is recognized as the international language of air traffic control, and all pilots who fly between nations must speak enough English to talk to the ground. The pilot who never leaves French airspace is perfectly safe knowing only French, and should a Mexicana Airlines pilot wish to speak Spanish to the ground in Madrid, that is also acceptable. But if no one on the ground speaks the pilot's language, the parties can always converse in English. The mutual aversion, an air disaster, is avoided and a safe equilibrium is assured.<sup>32</sup>

Preemption provides still another solution to dilemmas of common aversions. In these situations with multiple equilibria and a mutually least preferred outcome, an actor's incentive is often to preempt the other because it knows that the other must then go along. If it is wrong, of course, assuming, for example, that an oncoming car will swerve if it keeps going, the attempted preemption leads directly to the common aversion. Often, however, preemption is based on firm knowledge or safe assumptions and is therefore successful. In these cases, preemption forms the basis of coordination, and it works well when it involves the exercise of squatters' rights in an area where they are traditionally respected or are likely to be so. One striking example has been the preemption of radio frequencies within accepted constraints. International meetings have allocated various portions of the radio spectrum for specific uses, and countries have then been free to broadcast appropriately along whatever frequency is available. They are required to register the frequencies they have claimed with the International Frequency Registration Board, but even then, other nations sometimes broadcast on the same wavelength when it is available. This practice is not permitted, but it is accepted. It has been without challenge that the Soviet Union prowls the shortwave band for unused frequencies on which it then broadcasts its own propaganda. The result is a system of allocation that allows all nations the

<sup>31</sup> The organization is the governing body for almost all international civil air traffic.

<sup>32</sup> There does exist a dilemma of common aversions that can be solved by coordination *or* by collaboration. Like other situations characterized as dilemmas of common aversions, the actors in the game of chicken have contingent strategies, do not agree on a most-preferred outcome, but do share a mutual aversion. In this case, the actors diverge in their assessment of the two equilibria. Unlike those of other dilemmas of common aversions, the two equilibria in chicken are not coordination equilibria. In chicken, the nonequilibrium minimax outcome is the second choice of both actors and is not Pareto-deficient. Thus, the situation is not merely one of dead-lock avoidance, but one that can be solved either by coordination to arrive at one of the two equilibria or by collaboration to accept second-best. Here, too, the collaboration is not self-enforcing and requires mutual assurances about defection from a particular outcome. No-fault insurance agreements are one example of a collaboration regime to resolve a dilemma of common aversions. Note that Lewis would not consider chicken to be a coordination problem because the two equilibria in chicken are not coordination equilibria. I believe that it *is* a coordination problem, but one that collaboration can also solve.

use of an adequate number of frequencies for broadcast with minimal international interference.

As the number of nations in the world has increased, however, the radio band has become more crowded, and Third World nations have demanded greater access to radio frequencies.<sup>33</sup> To some, the allocation of frequencies has now become a dilemma of common interests, for their worst outcome is to fail to get on the radio at all. In other words, they actually prefer the radio traffic jam that previously constituted the dilemma of common aversions in the hope that the other broadcaster will eventually give up and leave them an unimpeded signal. No longer willing to accept what has become in practice a form of coordination for the powerful, they are calling for “planning” (i.e., collaboration) to replace the current system. Broadcasting has long been a traffic problem requiring only coordination in order to facilitate access to the airwaves. With greater congestion, however, it is rapidly becoming a dilemma of the commons, which requires a *collaborative* allocation of a scarce resource.

### Regimes and interests

This conceptualization of regimes is interest-based. It suggests that the same forces of autonomously calculated self-interest that lie at the root of the anarchic international system also lay the foundation for international regimes as a form of international order. The same forces that lead individuals to bind themselves together to escape the state of nature also lead states to coordinate their actions, even to collaborate with one another. Quite simply, there are times when rational self-interested calculation leads actors to abandon independent decision making in favor of joint decision making.

This formulation presumes the existence of interdependence—that an actor’s returns are a function of others’ choices as well as its own. If actors were independent in the sense that their choices affected only their own returns and not others’, then there would be no basis for international regimes.<sup>34</sup> Interdependence in the international arena, especially given the relatively small size of the system, makes mutual expectations (and therefore perceptions) very important.<sup>35</sup> An analogy from economics is often used to make this point. There are so many firms in a perfectly competitive market

<sup>33</sup> For background and analysis of the most recent World Administrative Radio Conference of 1979, see the articles in *Foreign Policy* no. 34 (Spring 1979): 139–64; and those in *Journal of Communication* 29 (Winter 1979): 143–207. See also “Scramble for the Waves,” *Economist*, 1 September 1979, p. 37; “The Struggle Over the World’s Radio Waves Will Continue,” *Economist*, 8 December 1979, p. 83; and “Policing the Radio,” *New Statesman*, 14 December 1979, p. 924.

<sup>34</sup> The absence of regimes does not mean, however, that the actors are independent of one another.

<sup>35</sup> The conditions in which misperception matters, and the ways in which it matters, are delineated in Arthur A. Stein, “When Misperception Matters,” *World Politics* 34 (July 1982).

that each firm is assumed to have a dominant strategy and to make decisions without taking into account expectations of others' potential behavior or responses. Oligopolistic or imperfect competition is distinguished precisely by the small number of actors, which makes necessary and possible the incorporation of expectations in the context of interdependence.

This conceptualization also explains why the same behavior that sometimes results from independent decision making can also occur under regimes. Arms buildups provide one example. On one hand, an arms race is not a regime, despite the existence of interaction and although each actor's decisions are contingent on the other's. An arms race is not a regime because the behavior, although patterned, is the result of independent decision making. On the other hand, arms increases can result from an arms control agreement that *is* a regime because the arms buildup results from mutual arrangements that shape subsequent decisions. Indeed, most arms control agreements have not been arms reduction agreements, but agreements of controlled escalation. By arriving at such an agreement, both actors thus participate in shaping their subsequent actions.<sup>36</sup>

This conceptualization of regimes also clarifies the role of international institutions, which many equate with regimes. Even those who recognize that regimes need not be institutionalized still suggest that institutionalization is one of their major dimensions. Indeed, one scholar refers to noninstitutionalized regimes as quasi-regimes.<sup>37</sup> But the conceptualization I have presented here suggests that international organizations and regimes are independent of one another; each can exist without the other. Regimes can be noninstitutionalized as well as institutionalized, and international organizations need not be regimes, although they certainly can be.<sup>38</sup> The United Nations is an example of an international organization that is not a regime, for mere membership in no way constrains independent decision making. The UN provides a forum for formal and informal interaction and

<sup>36</sup> Goodin, in *Politics of Rational Man*, p. 26, puts it this way: "Joint decision making is said to occur when all actors participate in determining the decisions of each actor. It implies that there was interaction between all the actors prior to the decisions and that this interaction shaped the decision of each actor." It is not surprising, then, that two recent formulations both stress the importance of agreement as part of their definition of regimes: see Young, "International Regimes"; and Ernst B. Haas, "Why Collaborate? Issue-Linkage and International Regimes," *World Politics* 32 (April 1980), p. 358. For interesting delineations of the range of decision-making procedures, see Knut Midgaard, "Co-operative Negotiations and Bargaining: Some Notes on Power and Powerlessness," in Barry, *Power and Political Theory*; and I. William Zartman, "Negotiations as a Joint Decision-Making Process," *Journal of Conflict Resolution* 21 (December 1977): 620-23. Both of these authors, however, heavily emphasize the bargaining process. Various forms of international cooperation can also be seen as forms of decision making; see Jan Tinbergen, "Alternative Forms of International Co-operation: Comparing Their Efficiency," *International Social Science Journal* 30 (1978): 224-25.

<sup>37</sup> Hayward R. Alker Jr., "A Methodology for Design Research on Interdependence Alternatives," *International Organization* 31 (Winter 1977), pp. 37-38.

<sup>38</sup> Although I do not define regimes by reference to their degree of institutionalization, it is the case that collaboration regimes are more likely to be institutionalized than coordination regimes, because of the requirements of enforcement.

discussion, but it is not a regime because membership generates no convergent expectations that constrain and shape subsequent actions.

The presumption of the existence of dilemmas of common interests and common aversions that give rise to regimes assumes that self-interested actors do indeed have things in common. This is very much a liberal, not mercantilist, view of self-interest; it suggests that actors focus on their own returns and compare different outcomes with an eye to maximizing their own gains.

An alternative conception of competitive self-interest is that actors seek to maximize the difference between their own returns and those of others. This decision rule, that of difference maximization, is competitive, whereas a decision-criterion of self-maximization is individualistic. When applied by any actor, it transforms a situation into one of pure conflict in which the actors have no mutual interests or common aversions; it implies a constant-sum world in which an improvement in one actor's returns can only come at the expense of another's.<sup>39</sup>

Actors who are competitors rather than individualists do not confront dilemmas of common interests or common aversions. Out for relative gain, they have nothing in "common." The prisoners' dilemma is an interesting illustration of this point. When both actors apply a difference-maximization decision rule to the preference ordering that defines a prisoners' dilemma, the situation that results is one in which the actors' dominant strategies are the same. They no longer find the equilibrium outcome deficient and do not prefer an alternative one. The situation no longer provides them with a rational incentive to eschew independent decision making in order to create and maintain a regime. Thus, to see the existence of international regimes composed of sovereign entities who voluntarily eschew independent decision making in certain cases is to see the world in nonconstant-sum terms, a world in which actors can have common interests and common aversions.<sup>40</sup> It is self-interested actors who find a common interest in eschewing individuality to form international regimes.

This conceptualization of regimes also explains why there are many regimes and why they vary in character, why they exist in some issue-areas

<sup>39</sup> Difference maximization is discussed by Charles G. McClintock, "Game Behavior and Social Motivation in Interpersonal Settings," in *Experimental Social Psychology*, ed. by Charles Graham McClintock (New York: Holt, Rinehart and Winston, 1972), pp. 271-92. Taylor calls them pure difference games and designates them a subtype of games of difference generally; see *Anarchy and Cooperation*, pp. 73-74. See also Martin Shubik, "Games of Status," *Behavioral Science* 16 (March 1971): 117-29.

<sup>40</sup> Those who argue that world politics constitutes a zero-sum game cannot, of course, sustain their position at the extremes. After all, it is impossible for all dyadic relationships to be zero-sum or constant-sum in a world of more than two actors. Thus, even if some relationships in international politics are zero- or constant-sum, there must also exist some subset of relationships that are nonconstant-sum and therefore provide a basis for regime formation among this subset of nations. Yet Robert Gilpin still claims "that in power terms, international relations is a zero-sum game." See *U.S. Power and the Multinational Corporation: The Political Economy of Foreign Direct Investment* (New York: Basic Books, 1975).

and not in others, and why states will form regimes with one another in one domain while they are in conflict in another. The existence or nonexistence of regimes to deal with given issues, indeed the very need to distinguish them by issue, can be attributed to the existence of different constellations of interests in different contexts.

### *Structural bases of regime formation*

In this formulation, the factors that others argue to be the bases of regime formation, whatever they may be, should be understood instead as constituting the determinants of those different patterns of interests that underlie the regimes themselves. More specifically, I argue here that behavior is best explained by constellations of preferences that are in turn rooted in other factors. Many of these foundations are structural. The view most widely held among international relations theorists, for example, is that the global distribution of power is the structural characteristic that determines the nature of global order. One currently popular proposition links global predominance to stability; more specifically, it links a hegemonic distribution of power to open international economic regimes.<sup>41</sup> Most blithely tie the distribution of power to the nature of the economic order, but few make the explicit causal argument that depends on deducing a set of interests from a particular distribution of power and then ascertaining what order will emerge given power and interests.<sup>42</sup> The argument here is that interests determine regimes, and that the distribution of power should be viewed as one determinant of interests. In other words, a state's degree of power in the international system is one of the things that explains its preferences, and the distribution of power between states determines the context of interaction and the preference orderings of the interacting states and thus determines the incentives and prospects for international regimes. Structural arguments should be recognized as constituting the determinants of those different patterns of interest that underlie the regimes themselves.

A similar structural argument can be used to explain subsystemic regimes, for the extraregional context or structure can determine the constellation of preferences among intraregional actors. Great powers can often structure the choices and preferences of minor powers and thus shape regional outcomes. Many of the cooperative arrangements between western

<sup>41</sup> Recent exponents of the predominance model of stability, as opposed to the classical balance-of-power model of stability, include A. F. K. Organski, *World Politics*, 2nd ed. (New York: Knopf, 1968), pp. 338–76, and George Modelski, "The Long Cycle of Global Politics and the Nation-State," *Comparative Studies in Society and History* 20 (April 1978): 214–35. The international political economy variant of the argument is provided by Stephen D. Krasner, "State Power and the Structure of International Trade," *World Politics* 28 (April 1976): 317–47; see also Stein, "The Hegemon's Dilemma."

<sup>42</sup> Note that this is precisely the way in which Krasner develops his argument in "State Power."

European states immediately following the Second World War can be said to reflect the way in which, through carrot and stick, the United States structured the choices and preferences of those states. The prisoners' dilemma also illustrates this, for the dilemma can be seen as a parable of domination in which the district attorney structures the situation to be a dilemma for the prisoners.<sup>43</sup> Divide-and-conquer is one strategy by which the powerful can structure the interactions between others by determining for them their preferences among a given set of choices.

There are other structural factors, such as the nature of knowledge and the nature of technology, that also determine actor preferences and thus the prospects for regimes. The nature of technology, for example, is critically important to a state's decision whether or not to procure weapons. Typically, scholars have argued that states confront a security dilemma in which they have prisoners' dilemma preferences. All states have a dominant strategy of arming themselves, yet all find the armed world that results less preferable than a totally disarmed one. Yet the security dilemma presumes either that offensive weapons exist and are superior to defensive ones, or that weapons systems are not easily distinguishable.<sup>44</sup> If only defensive weapons existed, however, then no security dilemma could arise. The actors would no longer have dominant strategies of arming themselves, for the arms could not be used to exploit those who had not armed, and procurement would not be a required defense against exploitation at the hands of others' defensive weapons. The interaction between states would no longer lead to a Pareto-deficient equilibrium outcome, therefore, and there would be no need for an arms regime. Thus, the different constellations of preferences that exist in different areas and create different incentives and prospects for international regimes are in part a function of the nature of technology.

Changes in the nature of human understanding about how the world works, knowledge, can also transform state interests and therefore the prospects for international cooperation and regime formation. As late as the middle of the last century there was enormous variation in national quarantine regulations, for example. As long as there was no agreed body of validated knowledge about the causes of communicable disease and the nature of its transmission and cure, then state policy could and did reflect political concerns. Regulations to exclude or isolate goods and individuals, ostensibly for health reasons, were used as instruments of international competition and became the basis of conflict. But new scientific discoveries transformed this situation. There were medical discoveries about the microbes that caused cholera and leprosy among other diseases; discoveries of the transmission of yellow fever by mosquitoes and plague by rat fleas; and discoveries of preventive vaccines such as the one for cholera. "The numerous international

<sup>43</sup> Tom Burns and Walter Buckley, "The Prisoners' Dilemma Game as a System of Social Domination," *Journal of Peace Research* 11 (1974): 221–28.

<sup>44</sup> Robert Jervis, "Cooperation Under the Security Dilemma," *World Politics* 30 (January 1978): 167–214.

sanitary conferences, from 1851 up to the Constitution of the World Health Organization in 1946, clearly expressed the various milestones of medical insight."<sup>45</sup> International agreements on quarantine rules grew on this foundation. New knowledge thus changed state preferences and provided the basis for international cooperation and the depoliticization of health care policy.<sup>46</sup>

Just as structural factors underpin actor preferences, so do internal national characteristics. The interests of domestic economic sectors, for example, can be the basis for national interests.<sup>47</sup> Even if a state's interests do not reflect those of any specific sector or class, they may emerge from a state's attributes. Large populations and high technology generate demands that will require that a state go abroad for resources if domestic access to resources is inadequate.<sup>48</sup> Yet needed resources can be obtained by exchange as well as by plunder. One cannot, therefore, move from a delineation of internal characteristics to state behavior without incorporating some aspect of a state's relations and interactions with others. Internal characteristics may determine a single actor's preferences but, in order to ascertain outcomes, it is also necessary to know the interests of other actors and to have a sense of the likely pattern of strategic interaction.<sup>49</sup>

### *Regime change*

The same factors that explain regime formation also explain regime maintenance, change, and dissolution. Regimes are maintained as long as the patterns of interest that gave rise to them remain. When these shift, the character of a regime may change; a regime may even dissolve entirely. In-

<sup>45</sup> The quotation and the substantive discussion are from Charles O. Pannenberg, *A New International Health Order: An Inquiry into the International Relations of World Health and Medical Care* (Germantown, Maryland: Sijthoff and Noordhoff, 1979), pp. 179–80.

<sup>46</sup> Regulations founded on health reasons and scientifically based can still become the basis of political disagreement, as the Japanese response to the California medfly spraying in 1981 demonstrates.

<sup>47</sup> See, for example, Peter Alexis Gourevitch, "International Trade, Domestic Coalitions, and Liberty: The Crisis of 1873–1896," *Journal of Interdisciplinary History* 8 (Autumn 1977): 281–313; and James R. Kurth, "The Creation and Destruction of International Regimes: The Impact of the World Market," paper delivered at the American Political Science Association Meeting, Washington, D.C., August 1980.

<sup>48</sup> Robert C. North, "Toward a Framework for the Analysis of Scarcity and Conflict," *International Studies Quarterly* 21 (December 1977): 569–91.

<sup>49</sup> Note that this clearly distinguishes domestic sectoral from international structural approaches. Although both approaches can be seen as delineating the determinants of actor preferences, the international structural perspective can be claimed to determine the constellation of all actors' preferences. Thus, the existence of offensive weapons creates a prisoners' dilemma situation for any pair of nations. On the other hand, the sectoral approach explains one actor's preferences at a time, and thus must be linked with an analysis of the interaction between actors to explain outcome. This is, of course, why the analysis of foreign policy is not equivalent to the analysis of international relations. Thus, the works of Allison, Gourevitch, Katzenstein, and Kurth, among others, which explain foreign policy by reference to domestic economic or bureaucratic interests, remain incomplete precisely because they do not incorporate relations *between* nations.

corporating the determinants of interests leads one to argue that regimes are maintained only as long as the distribution of power (or the nature of technology, or knowledge, etc.) that determines a given constellation of interests remains. When the international distribution of power shifts, affecting, in turn, the preferences of actors, then the regime will change. Those who make a direct link between structure and regimes necessarily conclude that changes in the distribution of power lead to regime change. The argument here is more subtle. If interests intervene between structure and regimes, then only those structural changes that affect patterns of interest will affect regimes. Further, since other factors also affect interests, it may be that the impact of changing power distributions on actor preferences can be negated by other structural changes, such as those in technology. Or, changes in the other factors, such as knowledge, can lead to regime change without a change in the distribution of power. This describes the history of quarantine regulations, for example. Together, these might explain why some changes in the distribution of power have clearly been linked with regime changes whereas others have not.<sup>50</sup>

Regimes may be maintained even after shifts in the interests that gave rise to them, however. There are a number of reasons why. First, nations do not continually calculate their interactions and transactions. That is, nations only periodically reassess interests and power or the institutional arrangements that have been created to deal with a particular configuration of them. Once in place, the institutions serve to guide patterned behavior, and the costs of continual recalculation are avoided. Decision costs are high, and once paid in the context of creating institutions, they are not continually borne.<sup>51</sup>

An alternative argument is that the legitimacy of international institutions does not emerge from any waiving of national interest, but from an interest developed in the institutions themselves. Any shift in interest does not automatically lead to changes in the regime or to its destruction, because there may well be uncertainty about the permanence of the observed changes. The institutions may be required again in the future, and their destruction for short-term changes may be very costly in the long run. Institutional maintenance is not, then, a function of a waiving of calculation; it becomes a factor in the decision calculus that keeps short-term calculations from becoming decisive. There are sunk costs involved in international institutions and thus they are not lightly to be changed or destroyed. The costs of reconstruction are likely to be much higher once regimes are consciously

<sup>50</sup> The recognition of the multiple determination of actor interests also makes possible an issue approach to international politics that is not necessarily issue-structural.

<sup>51</sup> One can, of course, expect there to be lags between changes in interests and actor behavior; see Michael Nicholson, *Oligopoly and Conflict: A Dynamic Approach* (Liverpool: Liverpool University Press, 1972). Schick distinguishes realization lags from adaptation lags in "Some Notes on Thinking Ahead," p. 790.

destroyed. Their very existence changes actors' incentives and opportunities.<sup>52</sup>

There is, however, an alternative to the explanation that regime maintenance is merely a perpetuation of the exogenous factors that occasioned their rise. It may be that neither sunk costs nor delays in recalculation or reassessment are responsible for the maintenance of regimes. Max Weber argues that tradition provides legitimacy and is one basis for the maintenance of a political order, and this argument can be extended to international relations. International regimes can be maintained and sustained by tradition and legitimacy. Even those international institutions that exist in an anarchic environment can attain a legitimacy that maintains patterned international behavior long after the original basis for those institutions has disappeared. Thus, even though the constellations of interest that give rise to regimes may change, the regimes themselves may remain. This can be explained by means of interests by arguing that actors attach some value to reputation and that they damage their reputations by breaking with customary behavior.<sup>53</sup> An actor that no longer prefers the regime to independent decision making may nevertheless choose not to defect from it because it values an undiminished reputation more than whatever it believes it would gain by departing from the established order.

Finally, there is a possibility that the creation of international regimes leads not to the abandonment of national calculation but to a shift in the criteria by which decisions are made. Institutions created to assure international coordination or collaboration can themselves serve to shift decision criteria and thus lead nations to consider others' interests in addition to their own when they make decisions. Once nations begin to coordinate their behavior and, even more so, once they have collaborated, they may become joint-maximizers rather than self-maximizers. The institutionalization of coordination and collaboration can become a restraint on individualism and lead actors to recognize the importance of joint maximization. Those who previously agreed to bind themselves out of self-interest may come to accept joint interests as an imperative. This may be especially true of collaboration regimes, which require that actors trust one another not to cheat since they all have an incentive to do so. In these situations, one nation's leaders may come to have an interest in maintaining another nation's leaders in power, for they have worked together to achieve the optimal nonequilibrium outcome and they trust one another not to cheat. Recognition of the importance

<sup>52</sup> One can argue that regimes actually change actor preferences. The property rights argument about dealing with externalities through changes in liability rules is an example of a situation in which prearranged agreements are specifically devised in order to change utilities in subsequent interaction; see John A. C. Conybeare, "International Organization and the Theory of Property Rights," *International Organization* 34 (Summer 1980): 307–334.

<sup>53</sup> George A. Akerlof, "A Theory of Social Custom, of Which Unemployment May Be One Consequence," *Quarterly Journal of Economics* 94 (June 1980): 749–75.

of maintaining the position of others may become the basis for the emergence of joint maximization as a decision criterion for actors.

### **Conclusion**

The problems of analyzing regime formation, maintenance, and dissolution demonstrate the clear necessity for a strategic interaction approach to international politics. State behavior does not derive solely from structural factors like the distribution of power; neither can state behavior be explained solely by reference to domestic sectors and interests. Structure and sectors play a role in determining the constellation of actor preferences, but structural and sectoral approaches are both incomplete and must be supplemented by an emphasis on strategic interaction between states. It is the combination of actor preferences and the interactions that result from them that determine outcome, and only by understanding both is it possible to analyze and understand the nature of regimes in an anarchic world.

We have long understood that anarchy in the international arena does not entail continual chaos; cooperative international arrangements do exist. This article differentiates the independent decision making that characterizes "anarchic" international politics from the joint decision making that constitutes regimes. In doing so, it distinguishes the natural cooperation that results from harmonious interests from those particular forms of collective decision making that define regimes. Sovereign nations have a rational incentive to develop processes for making joint decisions when confronting dilemmas of common interests or common aversions. In these contexts, self-interested actors rationally forgo independent decision making and construct regimes.

The existence of regimes is fully consistent with a realist view of international politics, in which states are seen as sovereign and self-reliant. Yet it is the very autonomy of states and their self-interests that lead them to create regimes when confronting dilemmas.