

The Rational Design of International Institutions

EDITED BY

Barbara Koremenos, Charles Lipson, and Duncan Snidal



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The Rational Design of International Institutions

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IN MEMORIAM

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(1929–2001)

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Abstracts

The Rational Design of International Institutions

by Barbara Koremenos, Charles Lipson, and Duncan Snidal

Why do international institutions vary so widely in terms of such key institutional features as membership, scope, and flexibility? We argue that international actors are goal-seeking agents who make specific institutional design choices to solve the particular cooperation problems they face in different issue-areas. In this article we introduce the theoretical framework of the Rational Design project. We identify five important features of institutions—membership, scope, centralization, control, and flexibility—and explain their variation in terms of four independent variables that characterize different cooperation problems: distribution, number of actors, enforcement, and uncertainty. We draw on rational choice theory to develop a series of empirically falsifiable conjectures that explain this institutional variation. The authors of the articles in this special issue of *International Organization* evaluate the conjectures in specific issue-areas and the overall Rational Design approach.

Trust Building, Trust Breaking: The Dilemma of NATO Enlargement

by Andrew Kydd

Barbara Koremenos, Charles Lipson, and Duncan Snidal conjecture that the conditions of membership in international institutions will grow more restrictive as a response to uncertainty about state preferences. Membership criteria will act as a signaling device—states more committed to cooperation will be willing to meet the criteria, whereas those less committed to cooperation will not. The recent enlargement of NATO to include the former Warsaw Pact members Poland, Hungary, and the Czech Republic illustrates this logic. The potential candidates for admission had to meet standards with respect to democratization, civilian control over the military, and the resolution of border and ethnic disputes with neighbors. These criteria served to identify the more cooperative potential members and to encourage cooperative behavior among those who aspired to membership. However, NATO enlargement came at a price. Although trust was built and cooperation fostered between the East European states that gained membership, trust was broken and cooperation harmed between NATO and Russia. This unfortunate outcome represents a dilemma that arises in the expansion of a security community: While expanding the security community enlarges the zone of peace and mutual trust, it may generate fear

among those still on the outside, who view it as a potentially hostile alliance. I present a game-theoretic analysis of this dilemma and analyze the conditions under which it arises.

The Optimal Design of International Trade Institutions: Uncertainty and Escape

by B. Peter Rosendorff and Helen V. Milner

International institutions that include an escape clause generate more durable and stable cooperative international regimes and are easier to achieve *ex ante*. The escape clause is endogenous in a model of repeated trade-barrier setting in the presence of symmetric, two-sided, political uncertainty. They permit, along the equilibrium path, countries to temporarily deviate from their obligations in periods of excessive, unexpected political pressure at some prenegotiated cost. The architects of international agreements optimally choose a cost so that escape clauses are neither too cheap to use (encouraging frequent recourse, effectively reducing the benefits of cooperation) nor too expensive (making their use rare and increasing the chance of systemic breakdown). The international institution's crucial role is to provide information, verifying that the self-enforcing penalty has been paid (voluntarily), rather than to coerce payment. Escape clauses also make agreements easier to reach initially. Their flexibility reassures states that the division of the long-term gains from the agreement is not immutable.

Most-Favored-Nation Clauses and Clustered Negotiations

by Robert Pahre

Though substantively important, centralized negotiations have received less theoretical attention than problems of centralized monitoring and enforcement. I address this gap by examining variation in a particular form of centralized negotiations that I call "clustering." Clustering occurs when a state negotiates with several other states at the same time. Clustering enables states to avoid having to make concessions on the same issue to one state after another, and therefore has important distributional advantages. Clustering also centralizes bargaining within a regime, especially when several states cluster simultaneously in a "macro-cluster."

I propose several hypotheses about clustering. First, most-favored-nation (MFN) clauses are a necessary condition for clustering. They link the distributional conflicts among many pairs of countries and make centralized bargaining more likely. Second, increasing membership in the trade regime makes clustering more likely. This relationship between membership and centralization echoes Rational Design conjecture C3, CENTRALIZATION increases with NUMBER, though the causal mechanism differs significantly. Third, clustering provides distributional advantages to those who cluster. A state that clusters, such as France under the Méline tariff or Germany under Chancellors Leo von Caprivi and Bernard von Bülow, will make fewer concessions than one that does not.

Situation Structure and Institutional Design: Reciprocity, Coercion, and Exchange

by Ronald B. Mitchell and Patricia M. Keilbach

States experiencing negative externalities caused by other states' behaviors have incentives to devise international institutions to change those behaviors. The institutions states create to counter incentives to defect vary in whether and how they expand institutional scope to accomplish that goal. When facing symmetric externalities, states tend to devise narrow institutions based on issue-specific reciprocity. When facing asymmetric externalities, or upstream/downstream problems, states tend to broaden institutional scope using linkage strategies. When victims of an externality are stronger than its perpetrators, the resulting institutions, if any are devised, are likely to incorporate the negative linkage of sanctions or coercion. When victims are weaker, exchange institutions relying on the positive linkage of rewards are more likely. We illustrate the influence of situation structure on institutional design with three cases: international whaling, ozone-layer depletion, and Rhine River pollution.

Private Justice in a Global Economy: From Litigation to Arbitration

by Walter Mattli

Drawing on the analytical framework developed by Barbara Koremenos, Charles Lipson, and Duncan Snidal in the Rational Design project, I seek to shed light on the striking institutional differences among the various methods of international commercial dispute resolution for private parties. These methods include recourse to public courts and more frequently to private international courts, such as the International Court of Arbitration of the International Chamber of Commerce or the London Court of International Arbitration, as well as recourse to so-called ad hoc arbitration and alternative dispute-resolution techniques, such as conciliation and mediation. The key institutional dimensions along which these methods of international dispute resolution vary are (1) procedural and adaptive flexibility, and (2) centralization of procedural safeguards and information collection. I explain why different methods of international commercial dispute resolution are selected. I argue that these methods respond to the varying institutional needs of different types of disputes and disputants. Such needs can be explained in terms of the severity of the enforcement problem, uncertainty about the preferences or behavior of contractual partners, and uncertainty about the state of the world.

Multilateralizing Trade and Payments in Postwar Europe

by Thomas H. Oatley

Europe's postwar shift to multilateral trade and payments arrangements was complicated by three factors. Distributional problems and uncertainty about the state of the world made European governments reluctant to adopt multilateral arrangements without financial support from the United States. An enforcement problem made U.S. policymakers reluctant to finance a European multilateral trading system. The severity of these problems was reduced by institutional designs that combined flexibility, centralization, and particular

decision rules. Centralization and flexibility reduced uncertainty and softened distributive conflict. Centralization and particular decision rules solved the enforcement problem that U.S. policymakers faced.

The Institutional Features of the Prisoners of War Treaties

by James D. Morrow

During the twentieth century states negotiated and ratified formal treaties on the treatment of prisoners of war (POWs). These treaties have created a system for the treatment of POWs with universal and detailed standards and decentralized enforcement. I explain the form of the POW system as a rational institutional response to four strategic problems the issue of POWs poses: monitoring under noise, individual as opposed to state violations, variation in preferred treatment of POWs, and raising a mass army. In response to these four problems, neutral parties help address the problem of monitoring the standards. The ratification process screens out some states that do not intend to live up to the standards. The two-level problem of state and individual violations is addressed by making states responsible for punishing the actions of their own soldiers. By protecting POWs, the treaties help states raise armies during wartime. The POW case supports many, but not all, of the Rational Design conjectures. In particular, it suggests other strategic logics to explain variation in the membership and centralization of international institutions.

Institutions for Flying: How States Built a Market in International Aviation Services

by John E. Richards

In the aftermath of World War II, states created a complex set of bilateral and multilateral institutions to govern international aviation markets. National governments concluded bilateral agreements to regulate airport entry and capacity and delegated to the airlines, through the International Air Transport Association (IATA), the authority to set fares and the terms of service in international markets. The resulting mixture of public and private institutions produced a de facto cartel that lasted for more than thirty years. Consistent with the Rational Design framework put forth by Barbara Koremenos, Charles Lipson, and Duncan Snidal, I argue that the institutions states created reflect the bargaining and incentive problems generated by international aviation markets. This case provides support for four of the Rational Design conjectures and slightly contradicts three others.

Driving with the Rearview Mirror: On the Rational Science of Institutional Design

by Alexander Wendt

The Rational Design project is impressive on its own terms. However, it does not address other approaches relevant to the design of international institutions. To facilitate comparison I survey two “contrast spaces” around it. The first shares the project’s central question—What explains institutional design?—but addresses alternative explanations of

two types: rival explanations and explanations complementary but deeper in the causal chain. The second contrast begins with a different question: What kind of knowledge is needed to design institutions in the real world? Asking this question reveals epistemological differences between positive social science and institutional design that can be traced to different orientations toward time. Making institutions is about the future and has an intrinsic normative element. Explaining institutions is about the past and does not necessarily have this normative dimension. To avoid “driving with the rearview mirror” we need two additional kinds of knowledge beyond that developed in this volume, knowledge about institutional effectiveness and knowledge about what values to pursue. As such, the problem of institutional design is a fruitful site for developing a broader and more practical conception of social science that integrates normative and positive concerns.

Rational Design: Looking Back to Move Forward

by Barbara Koremenos, Charles Lipson, and Duncan Snidal

In this article we summarize the empirical results of the Rational Design project. In general the results strongly support the Rational Design conjectures, especially those on flexibility and centralization; some findings are inconclusive (in particular, those addressing scope) or point toward a need for theoretical reformulation (in particular, the membership dimension). We also address the broader implications of the volume’s findings, concentrating on several topics directly related to institutional design and its systematic study. First, we consider the trade-offs in creating highly formalized models to guide the analysis. Second, our discussion of the variable control is a step toward incorporating “power” more fully and explicitly in our analysis. We also consider how domestic politics can be incorporated more systematically into international institutional analysis. Finally, we initiate a discussion about how and why institutions change, particularly how they respond to changing preferences and external shocks. We conclude with a discussion of the forward-looking character of rational design.

The Rational Design of International Institutions

The Rational Design of International Institutions

Barbara Koremenos, Charles Lipson,
and Duncan Snidal

International institutions are central features of modern international relations. This is true of trade, international debt and financial restructuring, and even national security, once the exclusive realm of pure state action. It was certainly true of the two major military engagements of the 1990s, the wars in Kosovo and the Persian Gulf. As international institutions have gained prominence in the political landscape, they have increasingly become prominent topics for study. The sharpest debate among researchers has been theoretical: Do international institutions really matter? Missing from this debate is a sustained inquiry into how these institutions actually work. We shift the focus by posing researchable questions about how they operate and how they relate to the problems states face.

We begin with a simple observation: major institutions are organized in radically different ways. Some are global, essentially open to all states; others are regional, with restricted memberships. Some institutions give each state an equal vote, whereas others have weighted voting and sometimes require supermajorities. Institutions may have relatively strong central authorities and significant operating responsibilities or be little more than forums for consultation. Some arrangements—

As this project came to fruition, we received valuable input from many sources. We thank Kenneth Abbott, George Downs, James Fearon, Phillip Genschel, Charles Glaser, Lloyd Gruber, Miles Kahler, Robert Keohane, Dan Lindley, Lisa Martin, Ken Oye, Beth Yarbrough, Alexander Thompson, Mark Zacher, and especially Brian Portnoy, who participated in one or more of the conferences leading up to this volume. Jeffrey Smith, Ryan Peirce, Marc Trachtenberg, David Laitin, Joni Harlan, and Jama Adams provided other valuable comments, as did the participants at the Program on International Politics, Economics, and Security (PIPES), University of Chicago, where this project began. Students who participated in Barbara Koremenos' undergraduate seminar at UCLA, "International Cooperation," provided valuable feedback. We also thank the contributors for their efforts, not only on their individual articles but also on the design of the project as a whole. James Morrow, Ronald Mitchell, Peter Rosendorff, Robert Pahre, and especially Andrew Kydd contributed greatly to the project. We received invaluable criticism, prodding, and support from two anonymous reviewers, from the editors of *IO*, and from Lynne Bush. We thank the University of Chicago's Council on Advanced Studies on Peace and International Cooperation for funding support and the Harris Graduate School of Public Policy Studies for hosting the Rational Design conferences. Finally, we thank Loch Macdonald, Barbara Koremenos' neurosurgeon, who was there when we needed him.

for example, most bilateral treaties—have no formal organizational structure; these are plentiful because states have a striking tendency to codify their relationships in formal, legal arrangements.¹

Why do these differences exist? Do they really matter, both for members and for international politics more generally? Do they affect what the institutions themselves can do? We focus on these large questions of institutional design. Our basic presumption, grounded in the broad tradition of rational-choice analysis, is that states use international institutions to further their own goals, and they design institutions accordingly. This might seem obvious, but it is surprisingly controversial.

One critique comes from constructivists, who argue that international institutions play a vital, independent role in spreading global norms. We agree that normative discourse is an important aspect of institutional life (though surely not the whole of it) and that norms are contested within, and sometimes propagated by, international institutions. But it is misleading to think of international institutions solely as outside forces or exogenous actors. They are the self-conscious creation of states (and, to a lesser extent, of interest groups and corporations).

The realist critique is exactly the opposite. For them, international institutions are little more than ciphers for state power. This exaggerates an important point. States rarely allow international institutions to become significant autonomous actors. Nonetheless, institutions are considerably more than empty vessels. States spend significant amounts of time and effort constructing institutions precisely because they can advance or impede state goals in the international economy, the environment, and national security. States fight over institutional design because it affects outcomes. Moreover, the institutions they create cannot be changed swiftly or easily to conform to changing configurations of international power. Japan and Germany play modest roles in the UN today because they have been unable to reverse the decision made in 1944–45 to exclude them from the Security Council. Institutions rarely adapt immediately to states' growing (or ebbing) power. For this reason, and because institutions matter, states pay careful attention to institutional design.

Our main goal is to offer a systematic account of the wide range of design features that characterize international institutions. We explore—theoretically and empirically—the implications of our basic presumption that states construct and shape institutions to advance their goals. The most direct implication is that design differences are not random. They are the result of rational, purposive interactions among states and other international actors to solve specific problems.

We define international institutions as explicit arrangements, negotiated among international actors, that prescribe, proscribe, and/or authorize behavior.² Explicit arrangements are public, at least among the parties themselves. According to our definition, they are also the fruits of agreement. We exclude tacit bargains and implicit guidelines, however important they are as general forms of cooperation.

1. See Abbott et al. 2000; and Koremenos 2000.

2. For related definitions of international institutions, see Keohane 1984; and Young 1994.

Institutions may require or prohibit certain behavior or simply permit it. The arrangements themselves may be entirely new, or they may build on less formal arrangements that have evolved over time and are then codified and changed by negotiation. The 1961 Vienna Law on Treaties is a good example.

Although in most arrangements negotiators are typically states, this is not part of our definition; it is an empirical observation that may vary across issues and over time. In fact, nonstate actors participate with increasing frequency in institutional design. Multinational firms, nongovernmental organizations (NGOs), and intergovernmental organizations have all shaped international institutions, solely especially those dealing with the world economy, the environment, and human rights.

Thus our definition of international institutions is relatively broad. It includes formal organizations like the World Health Organization and International Labor Organization, as well as well-defined (and explicit) arrangements like “diplomatic immunity” that have no formal bureaucracy or enforcement mechanisms but are fundamental to the conduct of international affairs.

With this definition in mind, we can begin to explore how institutions vary and, later, how that variation may be the product of rational design considerations. Our work emphasizes five key dimensions within which institutions may vary:

- Membership rules (MEMBERSHIP)
- Scope of issues covered (SCOPE)
- Centralization of tasks (CENTRALIZATION)
- Rules for controlling the institution (CONTROL)
- Flexibility of arrangements (FLEXIBILITY)

These are certainly not the only significant institutional dimensions, but they have several advantages for our research. First, they are all substantively important. Negotiators typically focus on them, and so do analysts who study institutions. Second, they can be measured, allowing us to compare them within and across institutions over time. Third, they apply to the full array of international institutions, from the most formal to the least bureaucratic.

We locate our analysis in the rational regime tradition. We do not present a literature review but rather build on earlier work to develop the underlying parameters of this research project. We also do not counterpose “dueling perspectives” (realism versus institutionalism or rationalism versus constructivism, for example). Instead, we investigate the rational design approach on its own terms by developing a set of theoretically based conjectures, which are then evaluated empirically in the studies in this special issue of *International Organization*. Our view is that rational design can explain much about institutions, but not everything.³

3. Martin and Simmons assess past work on international institutions and propose an agenda focused on explaining causal mechanisms and institutional effects. Martin and Simmons 1998. Their framework complements ours and shows how rational choice can address other important empirical questions.

From Cooperation Theory to Rational Design

The postwar study of international institutions is coming full circle, but with a theoretical twist. The early literature focused on the operational details of international organizations. With the notable exception of neofunctionalist integration theory, it was heavily descriptive,⁴ neither theorizing institutions nor clarifying their relationships to wider issues of international relations. By the 1980s the literature had turned sharply toward theory under the broad rubric of “regimes.”⁵ Within regime theory, one important strand built on rational, game-theoretic analysis, especially the idea that the “shadow of the future” can support “cooperation under anarchy.”⁶

The study of regimes favored theoretical questions and moved the research agenda away from analyzing specific institutional arrangements.⁷ Likewise, the tools of game theory were directed mainly at general theoretical questions, focusing on cooperation, not institutions, as the dependent variable. The overriding question became “How could states and other international actors produce cooperative outcomes by their own, self-interested choices?” Indirectly, however, this work laid the foundation for a renewed exploration of institutions, this time as part of a wider theory of international cooperation. In focusing on how self-interested states could cooperate, it was logical to ask what role institutions could play. Institutions could be reconceptualized and theorized as arrangements that make cooperation more feasible and durable, at least in some circumstances.

Our goal is to close the circle that began with descriptive studies by explaining major institutional features in a theoretically informed way. We first relax some key assumptions of cooperation theory and then bring in institutions directly by incorporating insights from game theory and institutional analysis. In doing so, we pay particular attention to the logic of their development.

Extending Cooperation Theory

The cooperation literature is premised on the “Folk theorem,” which shows that cooperation is possible in repeated games.⁸ This result has a strong theoretical foundation and can be applied empirically to a wide range of contemporary issues. The density of contemporary international interdependence creates repeated inter-

4. The early issues of *International Organization*, for example, focused on describing newly formed organizations and publicizing their rules and votes.

5. Krasner 1983.

6. See Oye 1986; and Axelrod 1984.

7. Key works are Stephen Krasner's edited volume *International Regimes* (1983) and Robert Keohane's *After Hegemony* (1984). An excellent early overview is Haggard and Simmons 1987. Several commentators have noted that the field has had less and less to say about formal international organizations. See Rochester 1986; and Abbott and Snidal 1998.

8. See Friedman 1971; and Fudenberg and Maskin 1986.

action that makes cooperation feasible.⁹ In brief, the possibility of cooperation is present in most modern international issues.

If cooperation is within reach, why it is not always grasped? To answer that, we must go beyond any simple, optimistic interpretation of the Folk theorem. Although we assume that the general conditions of international interdependence are propitious, individual issues have features that make achieving and maintaining cooperation more problematic. Moreover, the standard Folk theorem conclusion needs careful refinement when applied to more realistic situations, where competing equilibria are in play, many actors are involved, and uncertainty is high.

Multiple equilibria are a major obstacle to cooperation that was downplayed by the early emphasis on 2×2 games. Although these simple games, especially Prisoners' Dilemma, did much to clarify our understanding of enforcement problems, their very simplicity could be misleading. In a simple 2×2 Prisoners' Dilemma, there is only one point of mutual cooperation, the unattainable Pareto optimum where both sides choose to cooperate rather than defect. In practice, states have a wide range of choices and many possible cooperative outcomes, often with different distributional consequences.

If actors prefer different outcomes, the range of possibilities creates bargaining problems. Which cooperative outcome should they choose? How, in other words, should they share any mutual gains from cooperation? These distributional questions do not arise in simple 2×2 Prisoners' Dilemma games, though they were discussed in some early work contrasting Prisoners' Dilemma and Coordination games.¹⁰ Recent work by Stephen Krasner, James Morrow, and James Fearon goes further, showing how distributional differences can undermine cooperation in significant ways. Hence, distribution problems merit at least as much attention as enforcement problems, which we know hamper international cooperation.¹¹

Large numbers also complicate cooperation. Kenneth Oye addresses the collective-action problem primarily by showing how interactions among large numbers can be decomposed into simple bilateral interactions.¹² Some issues, however, cannot be decomposed this way for technical reasons; others should not be decomposed because successful cooperation requires joint action by all (as in the provision of public goods). Large numbers raise questions about how to share both the costs and benefits of cooperation, especially when some actors are richer, bigger, or more powerful than others.

Uncertainty is a frequent obstacle to cooperation, as is "noise," the difficulty of observing others' actions clearly.¹³ States are naturally reluctant to disclose vital

9. Notable exceptions are crises where immediate incentives overwhelm longer-term considerations. We set such situations aside.

10. See Snidal 1985; and Stein 1983.

11. See Krasner 1991; Morrow 1994c; and Fearon 1998.

12. See Oye 1986; and Lipson 1986 for an application.

13. This point was foreshadowed by Downs, Rocke, and Siverson in their analysis of arms races, and by Downs and Rocke in their game-theoretic analysis of the limits to cooperation. See Downs, Rocke, and Siverson 1986; and Downs and Rocke 1990.

information that could make them more vulnerable. Reducing uncertainty among participants is a major function of institutions.¹⁴

Taken together, these factors—distribution, enforcement, large numbers, and uncertainty—suggest that cooperation can be very brittle in the real world. As these factors vary, the prospects for cooperation can shift dramatically, making it far more difficult to manage international cooperation than earlier, simplified theories would predict.

Bringing in Institutions

In broad international relations (IR) theories institutions play only a modest role. It is, after all, cooperation under anarchy. The primary reason for emphasizing anarchy is to rule out centralized enforcement, but there is little consideration of the other roles institutions might play. In fact, institutions often help resolve problems of decentralized cooperation.

IR theorists have begun to address problems of cooperation in more complex and realistic settings, where there may be noise and large numbers.¹⁵ It is generally recognized that institutions may make cooperation more likely,¹⁶ and the compliance literature has begun to analyze empirically how regime design promotes effective cooperation.¹⁷ So far, however, this has not developed into a more general theoretical analysis of specific institutional arrangements.

Our work departs significantly from the earlier cooperation literature. Because decentralized cooperation (supported by the Folk theorem) is difficult to achieve and often brittle, states devise institutions to promote cooperation and make it more resilient. But the form these institutions take varies widely. Often the necessary institutions are fairly minimal and simply reinforce the underlying conditions for cooperation, perhaps providing the information necessary for bilateral bargains. Other times, more complex problems may require a larger institutional role—such as when an issue involves actors with very different resources and information. Under these circumstances, institutions can play a major role in facilitating cooperation.

We argue that many institutional arrangements are best understood through “rational design” among multiple participants. This rationality is forward looking as states use diplomacy and conferences to select institutional features to further their individual and collective goals, both by creating new institutions and modifying existing ones. Even trial-and-error experiments can be rational and forward looking in this way. Although we do not argue that all institutional change is the product of conscious design, we do consider it the overriding mechanism guiding the devel-

14. See Keohane 1984; and Morrow 1994c.

15. On noise, see Downs and Rocke 1990. On large numbers, see Pahre 1994.

16. See Keohane 1984; and Axelrod and Keohane 1986.

17. See Chayes and Chayes 1995; and Mitchell 1994.

opment of international institutions.¹⁸ Moreover, though our primary purpose is to explain institutional design, our approach also provides an appropriate foundation for prescribing policy and evaluating existing institutions.¹⁹

Our argument that institutional design is deliberate is reflected in the difficult process of creating an international institution. The evolution of the General Agreement on Tariffs and Trade (GATT) into the World Trade Organization (WTO) involved extensive rounds of negotiation. The Law of the Sea Treaty was the culmination of protracted debate, including the sharply contested decision not to have stronger centralized institutions. The same process is seen in the development of the UN charter, which involved extensive planning and bargaining and was designed to achieve critical goals amidst great uncertainty. Moreover, its design has been modified over the years as new members have been admitted, the Security Council has changed, and specialized agencies have been created. Continuing calls for change remind us that most institutions evolve as members learn, new problems arise, and international structures shift. But institutional evolution still involves deliberate choices made in response to changing conditions.

Institutional development frequently depends on prior outcomes (“path dependence”) and evolutionary forces. As institutions evolve, rational design choices can arise in two ways. First, participants may modify institutions in stages, by making purposeful decisions as new circumstances arise, by imitating features from other institutions that work well in similar settings, or by designing explicit institutions to strengthen tacit cooperation. Second, institutions may evolve as states (and other international actors) select among them over time. States favor some institutions because they are better suited to new conditions or new problems and abandon or downplay those that are not. For example, the obvious place to handle intellectual property rights would seem to be the World Intellectual Property Organization, but the countries that generate most patents chose to move the issue to the WTO because it offered better enforcement mechanisms. Thus the institutionalization of the issue evolved significantly, not because an older institution was modified, but because another one offered a better institutional design.²⁰

Even institutions that are not highly formalized and arise through informal and evolutionary processes may embody significant rational design principles. Sovereignty is clearly the result of historical and normative processes, but at important

18. Our proposed conjectures are consistent with an evolutionary perspective that treats rational designs as superior in the sense of providing greater benefits to participants, even if participants are unwitting beneficiaries. Miles Kahler provides an excellent overview and discussion of the relationship between evolutionary and rational theories of international institutions. Kahler 1999. The two approaches begin to align through such concepts as “learning” and “imitation” as key factors underlying institutional development.

19. Of course, many efforts at institutional design fail. States may misunderstand the circumstances they face or wrongly anticipate how actors will respond to institutional innovations, or simply make mistakes.

20. See Schrader 1996.

junctures (Treaty of Westphalia, Congress of Vienna, Vienna Convention) it has been the object of rational design through codification and modification.

Thus, our basic strategy is to treat institutions as rational, negotiated responses to the problems international actors face. We can connect our definition of institutions to the language of game theory, where institutions are aspects of equilibria, including the rules of the game and the expectations of the actors.²¹ This equilibrium approach has several important implications.²²

First, institutional rules must be “incentive compatible” so that actors create, change, and adhere to institutions because doing so is in their interests. Consider an institution that can be sustained only through sanctions and whose members must apply these sanctions themselves. This is an equilibrium institution only if the members who are supposed to apply sanctions actually have incentives to do so. Incentive compatibility does not mean that members always adhere to rules or that every state always benefits from the institutions to which it belongs. It does mean that over the long haul states gain by participating in specific institutions—or else they will abandon them.

Second, specifying independent and dependent variables requires special care. An equilibrium is a statement of consistency among its elements. Decomposing an equilibrium into causal statements connecting independent and dependent variables requires looking beyond the equilibrium itself to the sequence of, and reasons for, institutional changes.

Third, the very institutions we seek to explain as “outcomes” may also play a causal role in shaping others, now or in the future. Consider the EU. Is it a “dependent” or an “independent” variable? The answer depends on the question we ask and the time frame we use. If we want to explain why the EU was formed and the features it has, it is a dependent variable (by our own choice). If we want to explain the shape of some subsequent institution, such as the WTO or the European Monetary System, the EU plays a significant causal role as an independent variable in the institution’s development. This is particularly important when we look at which actors are relevant to a particular design issue. An outcome (or dependent variable) at one stage—the membership of the EU—may become a causal factor (or independent variable) at another—the number of actors relevant in the design of the European Monetary System.

Dependent Variables

Consider an emerging international issue, such as global warming, the distribution of pirated software, or the sale of cloned human organs. If states want to promote a common interest, what kinds of institutions might they design to aid their efforts?

21. The converse is not true, and not all equilibria are institutions as we define them. In particular we exclude equilibria resulting from tacit bargains and implicit arrangements that arise without negotiation.

22. See Calvert 1995; Morrow 1994c; and Snidal 1997.

They might first ask whether they need an international institution at all. Perhaps their national capacities are more than adequate, or they are converging on tacit arrangements that require little elaboration. If they could benefit from explicit cooperation, they would ask whether current institutions could be extended to cover the issue, in whole or in part.

If the issue were novel (such as trade in cloned organs) and no existing organizations were well suited, then diplomats, executives, scientists, policy activists, and other interested parties might well consider creating a new organization. They would immediately confront several major questions. Should the new institution cover only cloned organs or should it also cover health- or trade-related issues? Should membership be limited to countries with advanced medical industries? What about other, less-developed countries? One practical reason for being inclusive is that excluded states might evade or undermine the rules. What about including scientific institutes, biotechnology companies, health advocates, medical ethicists, and other nonstate actors?

What institutional capacities are needed for success? Would a simple agreement suffice? Should the institution be centralized to collect data, monitor compliance, or even enforce some rules? Or should it be more decentralized, serving mainly as a forum for periodic bargaining? Should all actors be given equal voice and vote, or should some have only an informal, consultative role? What about the rules themselves in such a new and rapidly developing area? Should they be clear-cut and firm, or should they be more flexible, allowing easy changes by mutual agreement or opting out by dissatisfied states?

Regardless of the issue, these kinds of institutional choices zero in on our major concerns: how and why are international institutions designed as they are? To make headway on these overarching questions, we need some clear way to mark out major variations in institutional design. The simplest solution would be to use a single measure, one that describes institutions as, say, “stronger” or “weaker.” Unfortunately, such measures are misleading because they collapse several important institutional features into one overly simple statement. We could measure many institutional features in great detail, yielding rich descriptions of individual institutions, but this would obscure the most important types of variation among them. We have chosen instead to focus on a few recurrent problems of institutional design, particularly those we can identify theoretically as vital aspects of cooperation and that vary in measurable ways. Our approach highlights five key dimensions: MEMBERSHIP, SCOPE, CENTRALIZATION, CONTROL, and FLEXIBILITY. These are not the only important dimensions of institutions. Others may well prove significant, theoretically and substantively. In some cases, our dimensions must be refined to clarify design issues in specific institutions. Centralization, for instance, is a broad category—perhaps too broad for some cases. Nonetheless, our first effort is to reduce the myriad elements of institutional variation to a few measurable dimensions that show up repeatedly when institutions are designed or modified. We now take a closer look at each dimension and consider how they vary in modern international institutions.

Membership

Who belongs to the institution? Is membership exclusive and restrictive, like the G-7's limitation to rich countries? Or is it inclusive by design, like the UN? Is it regional, like ASEAN, or is it universal? Is it restricted to states, or can NGOs join?

Membership has been one of the most hotly contested issues in recent years. The expansion of NATO into Eastern Europe is a key example. Expansion, for those who favor it, represents a reinvigoration of the alliance, a commitment to the joint defense of Central Europe, and a symbolic inclusion of new members in the "West." For those who oppose it, NATO's movement to the East adds nothing to the defense of Western Europe and needlessly provokes an already humiliated Russia. These issues resonate widely because NATO is such a prominent and consequential institution.

Scope

What issues are covered? In global trade institutions, for example, some of the toughest battles have been over which sectors to include in negotiations. GATT left out several key economic sectors, but the WTO has expanded to incorporate most trade issues, including agriculture and services. It may be expanded further to include cross-border investments. At the other end of the spectrum are institutions like the 1965 U.S.–Canada auto trade deal designed to cover only one or two narrowly defined issues. This agreement, too, was eventually widened when it was incorporated into NAFTA.

Sometimes two seemingly unrelated issues are linked. A trade issue, for example, may be linked to a security issue to facilitate agreement and compliance. Or a side payment may be offered, as when the Nuclear Nonproliferation Treaty offered the transfer of peaceful nuclear technology to states that agreed to forgo nuclear weapons. Such side payments are clear evidence that scope is being manipulated to facilitate cooperation.

There is a continuum of issue coverage. At one end are institutions like the Antarctic Treaty System that cover a range of scientific, economic, and political issues. At the other end are some early environmental agreements that are restricted to a few well-defined issues, such as greenhouse gas emissions.

Sometimes scope is not open to design choice because of technical considerations or shared perceptions. In the Law of the Sea negotiations, for example, jurisdiction over ocean territories could not be separated from coastal environment and fishing rights issues. Technological interactions required that these issues be dealt with together in a comprehensive settlement.²³ But other Law of the Sea issues seemed

23. A parallel and important implication within rational institutional design is that all relevant "margins" of choice must be considered. Barzel 1989. In John Richards' analysis of international airline regulation in this volume, for example, effective agreements on airline fares also require that airlines be prohibited from competing on other margins, such as food quality or seat comfort.

to have little in common. Here linkage was more cognitive—a result of how issues were framed, especially under the rubric of the “common heritage of mankind.”²⁴

One difficulty in analyzing scope is that the issues themselves are not clearly defined. Does trade in all commodities constitute an issue? Or should we distinguish agricultural goods from manufactures? Although there is no general answer to this difficult task of assessing issue scope, focused empirical research can reveal the extent to which actors narrow or broaden the range of matters being addressed. The problem is simplified when negotiations are expanded to cover items that could clearly be dealt with separately or were not previously linked (as occurred with the “baskets” of the Helsinki negotiations). Most important, changes in institutional issue linkage over time indicate changes in scope within an arrangement.

Centralization

Are some important institutional tasks performed by a single focal entity or not? Scholars often misleadingly equate centralization with centralized enforcement. We use the term more broadly to cover a wide range of centralized activities. In particular we focus on centralization to disseminate information, to reduce bargaining and transaction costs, and to enhance enforcement. These categories are not exhaustive, but they cover many important centralized activities found at the international level.

Centralization is controversial, politically and conceptually, because it touches so directly on national sovereignty. According to the traditional view, states reject any form of centralized international authority. International relations is seen as an immutable anarchy. This is a powerful assertion, but it is only partly right. It blends a simplifying assumption (that theory building should begin with states as independent units) with some hyperbole and errant conclusions.

States understandably guard their domestic authority and their control over foreign policy. They are suspicious of encroachments by other states and strongly resist any shift of sovereign responsibilities to superordinate bodies. But saying that states rarely devolve such authority is inaccurate, and it is a misleading basis for constructing theory. After all, European states not only signed the Treaty of Rome but also agreed to the Single European Act, which permits majority voting.²⁵ They went still further at Maastricht, when they abolished national controls over money.²⁶ The EU is uniquely powerful as an international institution, but centralized controls are important elsewhere. The dispute-resolution panels of the WTO are a particularly significant example.

The least intrusive form of centralization is information collection, and many international institutions engage in it. Members of the IMF, for instance, need not

24. Haas 1980.

25. Moravcsik 1991.

26. See Kenen 1995; and Moravcsik 1998.

gather their own data on others' balance of payments. Instead the IMF regularly collects, evaluates, and publishes itemized statistics on its members' payments.

Bargaining procedures and rule enforcement can also be more or less centralized. At the World Bank, for instance, specialists negotiate loans for economic adjustment or major infrastructure investments. These packages require collective approval from a centralized body of members. Most international organizations have relatively decentralized enforcement arrangements. They specify possible punishments for rule violations but leave it up to the members to apply them. Because these multilateral sanctions are both limited and well specified, they minimize the chances for disproportionate punishment or cycles of retaliation. Still, the members themselves must apply the decentralized punishments and bear the inevitable costs.

GATT (and now the WTO) have relied on such decentralized sanctions for decades. If a dispute panel found violations of international trade rules, it was up to the injured party to retaliate within specified limits. GATT itself had no centralized power to punish or reward, only to authorize individual members to do so. This also shows how international organizations can combine elements of centralization and decentralization. The WTO's centralized arrangements for judging trade disputes go hand-in-hand with decentralized arrangements for enforcing the judgments.

Control

How will collective decisions be made? Control is determined by a range of factors, including the rules for electing key officials and the way an institution is financed. We focus on voting arrangements as one important and observable aspect of control.

Even if membership is universal, some states may carry considerably more weight than others because of voting and decision-making rules. Two interrelated rules are especially important: whether all members have equal votes and whether a minority holds veto power. If a minority can veto, its votes inherently carry special weight. In the UN General Assembly all members have equal votes. In the Security Council they do not, since only the permanent members can veto resolutions. The IMF and World Bank have explicit weighted-voting rules; the larger economies, which provide capital to these institutions, carry disproportionate votes. Another element of control is whether a simple majority, a super-majority, or unanimity is required. If a super-majority is needed, some state (or combination of states) may be able to block new rules, members, or officers.

Finally, we distinguish control from centralization. While centralization may reduce control in some cases, the two dependent variables generally vary independently. For example, changes in the voting rules within a quasi-legislative component of an international institution represent changes in control that do not affect the level of centralization. Similarly, centralizing information collection usually has little, if any, effect on who controls an institution.

Flexibility

How will institutional rules and procedures accommodate new circumstances? Institutions may confront unanticipated circumstances or shocks, or face new demands from domestic coalitions or clusters of states wanting to change important rules or procedures. What kind of flexibility does an institution allow to meet such challenges?

It is important to distinguish between two kinds of institutional flexibility: adaptive and transformative. “Escape clauses” are a good example of adaptive flexibility. They allow members to respond to unanticipated shocks or special domestic circumstances while preserving existing institutional arrangements. The general goal is to isolate a special problem—such as a spike in steel imports from a few producing countries—and insulate the broader institution (in this case, the GATT/WTO) from its impact. This limited flexibility is designed to deal chiefly with outlying cases, to wall them off from run-of-the-mill issues.

Some institutions have built-in arrangements to transform themselves in ways that are more profound. This deeper kind of flexibility usually involves clauses that permit renegotiation or sunset provisions that require new negotiations and ratification for the institution to survive. The initial terms of commodity agreements, for example, are typically five to seven years, after which they expire and have to be renegotiated. GATT did not have such a provision, but its periodic rounds of trade negotiations facilitated planning for larger institutional changes, leading to the WTO. GATT’s existing rules did nothing to block these larger changes, and its regular forums served to promote them.

Independent Variables

To explain variation in institutional design, we focus on the following independent variables: distribution problems (DISTRIBUTION); enforcement problems (ENFORCEMENT); number of actors and the asymmetries among them (NUMBER); and uncertainty about behavior, the state of the world, and others’ preferences (UNCERTAINTY ABOUT BEHAVIOR, UNCERTAINTY ABOUT THE STATE OF THE WORLD, and UNCERTAINTY ABOUT PREFERENCES).

Enforcement of agreements is a cornerstone concern in international anarchy. But recent debates have increasingly stressed that to understand which, if any, international institutional bargains are struck, one must examine distributional issues. The number and relative size of key actors has been a long-standing concern in debates about international cooperation, hegemony, and, more recently, the interrelationship of regional and global politics. Finally, uncertainty is the linchpin of traditional security problems and is equally central in economic and environmental issues.

These variables also play a crucial role in game theory. Enforcement and distribution problems emerge in any strategic situation. Number is the central variable of collective-action theory, and we broaden it here to include explicitly the

asymmetries that are so important in international affairs. Finally, many important theoretical developments in game theory over the past two decades center on uncertainty.

Since we extend the existing tradition of cooperation theory, it is useful to compare our independent variables with Oye's.²⁷ After all, institutions to promote cooperation must be designed around the factors that affect cooperation. But we adapt the independent variables to address the particular questions raised by institutional design. Oye focuses on three independent variables. The most important is "shadow of the future." We do not focus on this as a primary source of institutional variation because the general conditions for cooperation are typically met under contemporary conditions of high interdependence.²⁸ Instead, we emphasize how variation in the significance of enforcement problems across different issues affects institutional design.

Oye's second independent variable is the type of 2×2 game being played, though with an emphasis on Prisoners' Dilemma. Simple games have yielded important insights and have been subjected to important criticisms.²⁹ The most important substantive criticism is that concentration on Prisoners' Dilemma leads to an overemphasis on enforcement and cheating and to an underemphasis on distributional conflicts.³⁰ This problem can be partially solved by shifting attention to another 2×2 game (Coordination, for example), but each new game misses some other salient problem (such as enforcement). We resolve this by looking at distribution problems as a second independent variable.³¹

We use a broader version of Oye's third variable, "number." Looking beyond the raw number of actors relevant to an issue, we include asymmetries that might exist among them due to different capabilities. This consideration was important in the hegemony literature and becomes even more so in understanding how different-sized actors share control in institutionalized cooperation.

Finally, and most important, driven by advances in the economics of uncertainty and game theory we add "uncertainty" as a new category of independent variable. Uncertainty can impede cooperation, but its impact can be managed through institutions. Indeed, one feature common to our independent variables is that

27. Oye 1986.

28. Alternatively, states will not waste time designing institutions that will not be enforced by their own incentives.

29. In particular, once the games are complicated even slightly, the clean distinctions among them break down. When Prisoners' Dilemma repeats through time, for example, multiple equilibria emerge, and the supergame contains distributional problems. Similarly, recurring Battle of the Sexes problems create incentives for some states to shift the prevailing equilibrium.

30. See Krasner 1991; and Grieco 1988.

31. James Fearon makes a parallel argument that, at a sufficiently general level, all problems in international relations have a common strategic structure. Fearon 1998. States must choose among the range of available cooperative arrangements and ensure that participants will adhere to the chosen arrangement. We label these the "distribution problem" and the "enforcement problem," respectively.

game-theoretic logic allows us to connect them to the dependent variables of institutional design.³²

Distribution Problems

When more than one cooperative agreement is possible, actors may face a distribution problem. Its magnitude depends on how each actor compares its preferred alternative to other actors' preferred alternatives. In a pure Coordination game, where both actors prefer the same coordination point(s), there is no distribution problem. Distribution problems are greater when actors want to coordinate in a "Battle of the Sexes" game according to the intensity with which they prefer alternative coordination points. In Prisoners' Dilemma games where there are multiple efficient equilibria, the distribution problem depends on actors' differences "along the Pareto frontier."³³ Finally, the problem is most severe in a zero-sum game because a better outcome for one leaves less for the others.

Distribution problems are closely related to bargaining costs.³⁴ In general, where the distributional implications of a choice are small (such as when only one efficient outcome is possible or the shadow of the future is short), bargaining costs will be relatively small. In situations where the distributional implications are large (such as when there are multiple, substantially different efficient outcomes or the shadow of the future is long), bargaining costs will likely be large.

Distribution problems interact with the other independent variables, but they should be kept separate. Most important, distribution problems are not the same as uncertainty. Uncertainty arises when an actor cannot anticipate the outcome that will result from an agreement and knows only the stochastic "distribution" generating the outcome. In their collaborative venture to develop an anti-missile system, for example, Japan and the United States are uncertain whether the research will be successful even though they are sure they will both share fully in the findings. In contrast, a distribution problem refers to selecting one outcome from a range of known possible outcomes. In allocating quotas for harvesting West Coast salmon, for example, Canada and the United States know the total number of fish that will be caught; the problem is determining each country's allotment. Of course, these problems intertwine in many situations where actors choose among agreements characterized by different stochastic distributions. This is true of fishing agreements over time where both the allotments between states and the size of the fish harvest over time are at stake.

32. We asked contributors to examine these independent variables but also invited them to consider others; thus the project as a whole is open to a wider set of independent variables, albeit in a more inductive way.

33. Krasner 1991.

34. Fearon 1998.