

Compliance Theory: A Synthesis

Ronald B. Mitchell

■ Introduction

This article considers the political science debate on the sources of treaty compliance in international environmental affairs.¹ It outlines the sources of compliance and non-compliance and provides a framework for thinking about treaty compliance systems. It summarizes empirical results from international regulation of intentional oil pollution which show that treaties can lead to compliance that would not have occurred in the absence of these treaty arrangements.

Brierly observed nearly five decades ago that many are cynical about the validity of international law, thinking it a sham. Others believe it to be 'a force with inherent strength...'. Cynic and sciolist alike, however, mistakenly assume that it is a subject about which intuitive opinions may be formed without study of relevant facts.²

Brierly's insightful observation has only recently been considered empirically, as political scientists have begun to evaluate the impact of international environmental law on behaviour. This article examines the current state of debate among political scientists on the relationship of compliance to treaty provisions in the realm of international environmental affairs. Do nations and their citizens adjust their behaviour to comply with environmental treaties? Can we improve environmental treaties to make compliance more likely? If so, how? Two schools of thought – what I shall call realist and institutionalist – provide different, though possibly complementary, answers to these questions.

Treaty goals are not always achieved as completely and effectively as possible. Diplomats and lawyers draft and amend environmental treaties. Environmental groups lobby for new and stronger agree-

ments. Business groups often oppose environmental treaty provisions as too costly. All these actions appear to reflect a belief that better law can remedy bad behaviour. As these actors often are responding to concerns particular to a given treaty, however, they frequently fail to identify the general reasons why one treaty elicits compliance while another does not.

Political scientists seek to provide a systematic methodology for identifying the empirical relationship between environmental treaties and behaviour. In international relations, issues of compliance quickly enmesh one in a larger debate over why nations behave the way they do. The realist school of thought views the pursuit and use of power and the anarchic structure of modern international relations as the primary determinants of international behaviour.³ International law has little significant impact on nations' policies. 'Considerations of power rather than of law determine compliance' in all important cases.⁴ The conformance of state behaviour to treaty rules reflects spurious correlation rather than true causation: the structural factors that lead states to certain actions also lead them to negotiate treaties codifying those actions. Realists urge a scepticism about claims that treaties cause behaviour to change, suggesting alternative reasons for compliance.

Institutionalists and international lawyers agree with Morgenthau that 'the great majority of the rules of international law are generally observed by all nations'.⁵ Disagreement arises over whether we can attribute such behaviour to an applicable treaty. International institutions, regimes, organizations, and treaties 'appear to be major determinants of collective behaviour ... at the international level'.⁶ Given this assessment, institutionalists have sought to identify the conditions under which treaties can influence behaviour and

the types of norms, principles, rules and processes that do so most effectively.⁷ While realists see states as dominating international affairs, non-state actors also play important roles in institutionalist theories as targets of regulation and as participants in the effort to elicit compliance.⁸ From these two outlooks, this article develops a synthetic framework for subsequent analysis of the degree to which treaty rules influence behaviour and the causal mechanisms by which they do so.

■ Definitions

This article defines compliance as an actor's behaviour that conforms to a treaty's explicit rules, and distinguishes treaty-induced compliance as behaviour that occurs **because of** the treaty's compliance system.⁹ The realist-institutionalist debate becomes a question of whether treaty-induced compliance ever occurs. Despite frequent application of the term 'compliance' to a broad range of behaviours, restricting study to **explicit** treaty provisions allows replicable evaluation of compliance against clearer and less subjective standards.

Evaluating compliance against treaty provisions also makes more sense than speaking of compliance with the treaty as a whole. Parties often comply with some treaty provisions while violating others. To speak of 'treaty compliance' therefore eliminates valuable empirical information by aggregating violation of one provision with compliance with another.

While measuring compliance by strict reference to legal standards allows only a binary assessment of compliance (either an actor complies or violates), treaties can induce beneficial behaviours that either fall short of compliance, or go far beyond treaty requirements.¹⁰ Indeed, treaty-induced compliance is only one form of treaty effectiveness, *i.e.* the treaty's success at inducing behavioural and environmental changes that would not have occurred in the absence of the treaty.

■ Sources of Compliance

Governments and private actors may undertake acts that the treaty defines as compliance for many reasons having little to do with treaty dictates. The reasons may be categorized broadly as arising from independent and interdependent self interest.

Compliance as Independent Self Interest

To a realist, compliance is not surprising. Nations negotiate treaties precisely 'for the promotion of their national interests, and to evade legal obligations that might be harmful to them'.¹¹ Treaty rules may require little or no change in behaviour, especially among 'leader' states or when they contain vague and ambiguous language. Treaties can require states to take actions they were already planning on taking or refrain from actions they have no immediate incentives to take. Treaties may reflect 'suasion' games where one or more powerful states benefit from unilateral compliance but benefit more if others also comply.¹²

Institutionalists believe that states adopt longer-term views of self interest that lead them to comply in a wider range of situations. States and corporations may fear the unknown and unintended side effects of their current non-compliance on the future of the treaty and on a range of other relationships.¹³ They may fear adverse public opinion, domestically or internationally. Parties may comply with rules viewed as fair and legitimate even if costly at times.¹⁴ Bureaucratic procedures, group think, and bounded rationality may make the choice of compliance – once initiated – hard to revisit.¹⁵ Treaty rules simplify and reduce the number of decisions actors must make in a complex environment.¹⁶ Economic and technological changes may make compliance less costly, as has happened with the decreasing costs of chlorofluorocarbon substitutes increasing the likelihood that the Montreal Protocol's phase-out deadlines will be met.¹⁷ These factors will explain much compliance that we observe, but such behaviour is not treaty-induced compliance. For these actors, treaty rules have been brought in line with existing or intended future behaviours, and not vice versa.

Compliance as Interdependent Self Interest

Compliance can also arise when states and corporations recognize the impact their own compliance will have on others. When actors seek to coordinate their behaviours, as in identifying common aviation and navigation rules or allocating satellite slots, treaties help avoid suboptimal outcomes from independent decision making. Each actor prefers compliance so long as enough other actors comply. Treaty outcomes are stable, none has incentives to violate, and no sanctioning prob-

lems arise.¹⁸ While treaties will tend to benefit the strong, they will not need to induce compliance from weak states.

Unfortunately, environmental problems more often resemble Prisoner's Dilemma-like collaboration games in which joint compliance is preferred to joint violation but in which each actor's dominant strategy is to violate, even if others comply. Compliance requires enforcement, and collaboration treaties 'must specify strict patterns of behavior and insure that no one cheats'.¹⁹ For realists, compliance will arise only if a dominant state perceives sufficient benefits from collaboration to comply itself and enforce compliance by others. Institutionalists argue that states can elicit compliance if they establish structures and strategies to foster ongoing reciprocity where non-compliance is met with either direct retaliatory non-compliance or sanctions in a linked issue area. Compliance may be fragile in such cases but is achievable.

■ Sources of Non-compliance

In many situations, actors may prefer non-compliance. The benefits of compliance, absent coercive efforts, simply may outweigh the costs. Even if a state's total social costs make compliance preferable, those being asked to comply often have strong incentives to violate. Some states may sign treaties to garner the political benefits of membership, never intending to comply. Some may sign with the intention of complying with most but not all rules.

Actors may also be unable to comply. Actors who perceive compliance as beneficial may lack the necessary financial, administrative or technological resources to comply.²⁰ Governments may lack the informational or regulatory infrastructures adequate to elicit compliance from corporate and individual citizens, especially in the case of environmental treaties.

Non-compliance can also arise from inadvertence: states may take actions sincerely intended and expected to achieve compliance but nonetheless fail to meet treaty standards. Inherent uncertainty in the impacts of policy strategies, like carbon taxes, mean even developed states' efforts to alter their citizens' behaviours may fail to achieve intended results.²¹

■ Eliciting Compliance in the Face of Pressures for Non-compliance

Treaties establish compliance systems to maximize the ranks of those predisposed to comply and effectively to elicit compliance from everyone else. Compliance systems have three subsystems: a primary rule system, a compliance information system, and a non-compliance response system. These three systems provide a framework for identifying how treaties that induce compliance do so. Given the obstacles to resolving international environmental collaboration problems, within each of these three systems, 'choices of strategies and variations in institutions are particularly important, and the scope for the exercise of intelligence is considerable'.²²

Primary Rule System

The **primary rule system** consists of the actors, rules and processes related to the behaviour targeted by the treaty. By its choice of who gets regulated and how, the primary rule system determines the pressures and incentives for compliance and violation.

In the primary rule system, choices regarding the type of activity, the number of actors engaged in it, and the magnitude of the required behavioural change can all have dramatic impacts on compliance. **Different solutions to the same problem** impose different costs on actors with different incentives to comply. Regional agreements can increase compliance by fostering more frequent interaction between actors. Agreements that put greater burdens on developed countries may generate more compliance because those countries have the incentives and resources to comply. Regulating point-source green-house gas emitters such as power plants and factories will likely prove more successful than regulating areal ones such as rice farmers and livestock cultivators.

Primary rules can also increase compliance by increasing specificity. More specific rules help those predisposed to comply by reducing the uncertainty about what they need to do, while removing the excuses of inadvertence and misinterpretation from actors predisposed to violation.²³

Compliance Information System

The **compliance information system** consists of the actors, rules and processes that collect, analyse and disseminate information on violation and compliance. These self reporting, independent monitoring, data analysis, and publishing activities determine the amount, quality, and uses made of data on compliance and enforcement. It consists of the actors, rules, and processes governing the responses to those identified as in non-compliance.

Treaty compliance information systems seek to maximize transparency, i.e. the amount and quality of information on compliance and non-compliance and the degree of analysis and dissemination.²⁴ Treaties usually provide for self reporting by national governments, but the wide variance in levels of self reporting suggests that some reporting systems work better than others.²⁵ Previously-regulated activities may already have data collection and dissemination systems on which a treaty can piggyback, as the acid rain convention used economic fossil fuel usage data to estimate emissions.²⁶ Transparency can be increased by making rewards for compliance conditional on supplying such reports or allowing inspections. Treaties can also increase transparency by involving environmental NGOs and industry groups and broadening the means authorized to collect, analyze and disseminate information. Treaty rules and procedures can also enhance information flow between parties, increase resources dedicated to monitoring, and finance the development of improved verification technologies.

Non-compliance Response System

The **non-compliance response system** determines the type, likelihood, magnitude, and appropriateness of responses to non-compliance. If a treaty's compliance information system develops information about non-compliance and non-compliers, successful alteration of their behaviour involves one of three strategies: facilitating compliance, sanctioning violation, or preventing violation.

■ Facilitating Compliance

Treaties can facilitate compliance by establishing financial mechanisms to fund projects that would be too expensive or controversial for individual donor countries. Technology transfers, like those in the Montreal Protocol, can remedy incapacity.

While often unrelated to specific treaty provisions, government aid programs, NGO debt swaps, and pharmaceutical company business deals, all seek to influence environmental policies of developing countries.²⁷ Financing and technology transfers reduce detection problems by providing incentives to reveal non-compliance and may lead states planning to violate to reconsider if the sums are large enough. Inducements face the 'mundane problem of funding', however: governments prove reluctant to pay their own compliance costs, let alone those of others.²⁸

Facilitating compliance also can involve discussions between secretariats, government officials, and the private actors responsible for the environmental problem, to help inform actors of new regulations and cheaper means of compliance, preventing non-compliance due to lack of knowledge or inadvertence. As environmental concerns increasingly influence overseas development aid, policy advisers can help devise programs to address or avoid the administrative incapacity problems that plague many developing nations.

Proponents of sanctions contend that 'compliance can be obtained efficiently by making violation unattractive rather than by altering the costs or benefits of compliance'.²⁹ To be effective these sanctions must be both credible and potent. Retaliatory non-compliance often proves unlikely because the costs of any individual violation may not warrant a response, and it cannot be specifically targeted, imposing costs on those that have consistently complied without hurting the targeted violator enough to change its behaviour. Sanctions via linkage are uncommon because they are often costly to the sanctioner. Despite these problems, sanctions remain a recurring theme in efforts to strengthen compliance systems. Regular meetings of treaty parties increase the opportunities for actors to bring diplomatic and public pressures on non-compliant actors.³⁰

Treaties that formally authorize and 'assign responsibility for applying sanctions' increase the expectation that 'a given violation will be treated not as an isolated case but as one in a series of interrelated actions'.³¹ Treaties can redefine what constitutes infringement of sovereignty by authorizing sanctions for specific treaty violations and can remove international legal barriers that constrain countries with incentives to enforce. Treaties can allow governments directly to sanction nationals or corporations of other nations; often, governments defend their own wrongful actions more than they defend those of their nationals. Treaty sec-

retariats can publish and disseminate information from the compliance information system to provide the basis for responses by governments, companies, NGOs, and the public.

Treaties can provide positive inducements and negative sanctions to elicit compliance, but they can also raise obstacles to non-compliance. Primary rules that coerce initial compliance reduce the demand for monitoring and enforcement. A coerced compliance system targets actors with few incentives to violate rules, or regulates transactions between actors with differing incentives. Such a strategy requires strong 'pre-monitory' control measures, i.e. efforts to inspect and survey behaviour before violations occur, rather than to detect and investigate them afterwards.³² Restricting the most transparent activity in the train of actions that precede an environmentally harmful action – even if it is not itself environmentally harmful – is the most effective means to prevent violations. A coerced compliance system skirts the problems of sanction-based, deterrence-oriented approaches such as detecting clandestine violations, collecting legally legitimate proof linking the perpetrator to a violation, and ensuring that sanctions deter others.

■ Intentional Oil Pollution: Some Empirical Results

Many scholars and policy analysts have begun empirical research into whether and how environmental treaties influence behaviour.³³ Scholars from various disciplines and countries are evaluating compliance by different actors with numerous treaties. My own empirical work on international regulation of intentional oil pollution under the International Convention for Prevention of Pollution from Ships (MARPOL) found that treaties can lead powerful governmental and corporate actors to adopt new behaviours that they initially opposed. Treaty-induced compliance does occur.

In three clear cases, actors complied with rules by adopting new behaviours that conflicted with short-term self-interest. First, all oil tankers required to install equipment to prevent intentional discharges did so on the schedule required despite significant costs and the absence of economic benefits, even though many were registered in states that had opposed the requirements. Equipment adoption reflected a direct response to international rules based on a 'coerced compliance'

model of regulation that sought primarily to prevent, rather than deter, violations.

Second, comparison of two different reporting systems documented that, of 14 developed European states, all reported almost daily on inspections under a regional, computerized arrangement for port state control while only half provided the annual paper reports required by the MARPOL treaty. The former system succeeded by embedding itself in the standard operating procedures of the enforcing bureaucracies and processing data in ways that helped reporting authorities deploy their limited enforcement resources more effectively.

Third, MARPOL led some governments to enforce oil pollution regulations more rigorously by authorizing detention of foreign tankers. These states had never detained such tankers before and they used detention even though other countries could not be excluded from the general environmental benefits that forcing equipment installations involved. While the rule has not transformed reluctant and unconcerned states into rigorous enforcers, it removed the legal obstacles to rigorous enforcement by concerned states.

In these three cases, evidence unambiguously demonstrates treaty rules influencing behaviour, even after controlling for other factors. In several other cases, treaty provisions failed to alter actors' behaviours. Together, they document that compliance levels are causally contingent on the types of rules and procedures adopted. Treaty compliance systems altered behaviour when they ensured at least some actors had the appropriate incentives, practical ability, and legal authority to monitor, enforce, and comply with treaty provisions. Treaty provisions succeeded when they provided the missing element from this incentives/ability/authority triangle. Treaty provisions failed when they ignored this strategic triangle.

The empirical work on intentional oil pollution also demonstrates that non-compliance with treaty provisions can be quite common. States do indeed sign up to commitments that they subsequently fail to fulfil. Likewise, reporting on enforcement and reception facilities clearly demonstrated that (1) non-reporting is common, and (2) non-compliance cannot be safely inferred from non-reporting. Compliance was also highly dependent on the monitoring, enforcement, and compliance behaviour of industry, NGO, and other non-state actors, as well as governments. The study provided

little evidence that governments use reciprocity, in the sense of retaliatory non-compliance, to induce other states to comply with international environmental commitments.³⁴ Treaties increase compliance by accomplishing three tasks: creating 'opportunistic' primary rule systems that impose requirements on those actors most likely to fulfil them, creating compliance information systems that give information providers a 'return on their investment', and creating non-compliance response systems that remove international legal barriers to those actors with incentives to respond to non-compliance.

Negotiators can facilitate compliance by taking advantage of the fact that power and interests vary from treaty provision to treaty provision, rather than ignoring the power and interests of relevant actors. Overall levels of environmental concern and the resources governments are willing to dedicate to protecting the environment set broad limits on compliance levels. Effective policies recognize that the amount and effectiveness of resources dedicated to treaty implementation are not a given of an issue area but depend on how treaty provisions are framed. Policy makers' choices regarding how to define compliance, monitoring and enforcement have significant implications for how much compliance the treaty elicits.

■ Conclusion

Nations will continue to negotiate treaties to address international environmental problems. Whether those treaties improve environmental management will depend on how negotiators frame treaty proscriptions and prescriptions and on the types of compliance systems they establish. The preceding discussion suggests some directions for such efforts.

The wide array of potential compliance sources suggests a healthy scepticism in assuming a treaty has caused compliance. Treaty rules and correlated behaviours may often be merely separate indicators of the same power and interests that drive much of international politics. If changes in rules do appear to have caused increased compliance, however, this review delineates the types of changes to the primary rule system, compliance information system, or non-compliance response system that we should expect to see.

Despite continuing reference to international environmental politics as a new field, many environmental treaties have been in force long enough to be analysed by those inclined to find data on the ways in which and the conditions under which international rules effect compliance.³⁵ Whether nations succeed at averting the many environmental threats that loom on the horizon will depend not on negotiating agreements to alter the behaviours that harm the air, land, and water but on ensuring that those agreements cause governments, industry and individuals to change their behaviour. We can hope and work for a day when all nations and their citizens are sufficiently concerned about the environment that we will not need international law to outlaw pollution and dictate environmentally-benign behaviours. Until then, however, identifying and implementing those treaty provisions that elicit compliance will provide one valuable means of managing our global environment.

■ Notes

1. For a more extended version of the arguments made herein, see chapter 2 of Ronald B. Mitchell, *International Oil Pollution at Sea: Environmental Policy and Treaty Compliance* (Cambridge, MA, The MIT Press, forthcoming).
2. J.L. Brierly, *The Outlook for International Law* (Oxford, The Clarendon Press, 1944), pp. 1-2.
3. For the major works on realism, see H.J. Morgenthau, *Politics Among Nations: The Struggle for Power and Peace*, brief ed., revised, and Kenneth Waltz, *Theory of International Politics* (Reading, MA, Addison-Wesley Publishing, 1979).
4. Morgenthau, n. 3 above, at 268.
5. *Id.* at 267. See, for example, Louis Henkin, *How Nations Behave: Law and Foreign Policy* (New York: Columbia Univ. Press, 1979), p. 47; Oran Young, *International Cooperation: Building Regimes for Natural Resources and the Environment* (Ithaca, NY, Cornell Univ. Press, 1989), p. 62 (hereafter, *International Cooperation*); and Abram Chayes and Antonia Chayes, 'Compliance Without Enforcement: State Behavior Under Regulatory Treaties', *Negotiation J.*, 7 (July 1991), 31. For an introduction to institutionalist views, especially regime theory, see Stephen Krasner (ed.), *International Regimes* (Ithaca, NY: Cornell Univ. Press, 1983); and for its application to international environmental problems see Peter Haas, Robert O. Keohane, and Marc Levy (eds.), *Institutions for the Earth: Sources of Effective International Environmental Protection* (Cambridge, MA, The MIT Press, 1993).
6. Young, *International Cooperation*, n. 5 above, p. 61.
7. Krasner, *International Regimes*, n. 5 above.

8. For the seminal work in this area, see Robert O. Keohane and Joseph S. Nye, Jr. (eds.), *Transnational Relations and World Politics* (Cambridge, MA, Harvard Univ. Press, 1972).
9. Roger Fisher, *Improving Compliance with International Law* (Charlottesville, VA, Univ. Press of Virginia, 1981), p. 20; Oran Young, *Compliance and Public Authority: A Theory with International Applications* (Baltimore, MD, Johns Hopkins Univ. Press, 1979), p. 104.
10. On this point, see Oran Young, 'The Effectiveness of International Institutions: Hard Cases and Critical Variables', in James N. Rosenau and Otto Czempel (eds.), *Governance Without Government: Change and Order in World Politics* (New York, Cambridge Univ., 1991), p. 183; Chayes and Chayes, 'On Compliance', and Marc A. Levy, 'The Effectiveness of International Environmental Institutions: What We Think We Know, and How We Might Learn More', Paper prepared for presentation at the Annual Convention of the International Studies Association, Acapulco, Mexico, 23-27 March 1993.
11. Morgenthau, n. 3 above, at 259.
12. Lisa L. Martin, 'Interests, Power, and Multilateralism', *International Organization*, 46 (Autumn 1992), 4; Waltz, *Theory of International Politics*, Chapter 9.
13. See Keohane, *After Hegemony: Cooperation and Discord in the World Political Economy* (Princeton, NJ, Princeton Univ. Press, 1984), p. 105; and Donald Puchala and Raymond Hopkins, 'International Regimes: Lessons From Inductive Analysis', in Krasner, n. 5 above, p. 90.
14. Thomas M. Franck, *The Power of Legitimacy Among Nations* (New York, Oxford Univ. Press, 1990); Puchala and Hopkins, n. 13 above, at 66.
15. Graham T. Allison, *Essence of Decision: Explaining the Cuban Missile Crisis* (Boston, MA, Little, Brown, 1971); Irving Lester Janis, *Groupthink: Psychological Studies of Policy Decisions and Fiascoes*, 2nd edn. (Boston, MA, Houghton Mifflin, 1982); John D. Steinbruner, *The Cybernetic Theory of Decision: New Dimensions of Political Analysis* (Princeton, NJ, Princeton Univ. Press, 1974).
16. Friedrich V. Kratochwil, *Rules, Norms, and Decisions: On the Conditions of Practical and Legal Reasoning in International Relations and Domestic Affairs* (Cambridge, England, Cambridge Univ. Press, 1989), p. 14.
17. Montreal Protocol on Substances that Deplete the Ozone Layer, 16 September 1987, reprinted in 26 ILM 1541 (1987), hereinafter cited as Montreal Protocol.
18. Thomas Schelling, *Micromotives and Macrobehavior* (New York, Norton, 1978); Robert Axelrod and Robert O. Keohane, 'Achieving Cooperation Under Anarchy: Strategies and Institutions', in Oye (ed.), *Cooperation Under Anarchy*, p. 235; Stephen Krasner, 'Global Communications and National Power: Life on the Pareto Frontier', *World Politics* 43 (April 1991); and Stein, 'Coordination and Collaboration', p. 130.
19. Stein, 'Coordination and Collaboration', pp. 128-130.
20. Young, 'The Effectiveness of International Institutions', pp. 183-85; Haas et al., n. 5 above.
21. On the uncertainty regarding emissions under a carbon tax, see Joshua M. Epstein and Raj Gupta, *Controlling the Greenhouse Effect: Five Global Regimes Compared* (Washington, DC, The Brookings Institute, 1990).
22. Axelrod and Keohane, n. 18 above, at 228-32.
23. On whether formal treaties make behavioural change more or less likely, see Puchala and Hopkins, n. 13 above, at 88; Charles Lipson, 'Why are Some International Agreements Informal?', *International Organization*, 45 (1991), p. 4; and Abram Chayes and Antonia Chayes, 'Non-proliferation Regimes in the Aftermath of the Gulf War', in Joseph Nye and Roger Smith (eds.), *After the Storm: Lessons from the Gulf War* (Lanham, MD, Madison Books, 1992), p. 50.
24. See, for example, Young, n. 10 above; and Abram Chayes and Antonia Chayes, 'Adjustment and Compliance Processes in International Regulatory Regimes' in Jessica Tuchman Mathews (ed.), *Preserving the Global Environment: The Challenge of Shared Leadership* (New York, W.W. Norton and Co., 1991).
25. United States General Accounting Office, *International Environment: International Agreements are not Well Monitored*, GAO/RCED-92-43 (Washington, DC, Government Printing Office, 1992).
26. Marc Levy, 'European Acid Rain: The Power of Toteboard Diplomacy' in Haas et al. (eds.), n. 5 above.
27. See Timothy B. Hamlin, 'Debt-for-nature Swaps: A New Strategy for Protecting Environmental Interests in Developing Nations', *Ecology L.Q.* 16 (1989); and Elissa Blum, 'Making Biodiversity Conservation Profitable: A Case Study of the Merck/INBio Agreement', *Environment*, 35 (May 1993), p. 4.
28. Chayes and Chayes, n. 5 above, at 318.
29. Young, n. 9 above, p. 20.
30. Axelrod, *The Evolution of Cooperation*, p. 132; Chayes and Chayes, n. 24 above.
31. Axelrod and Keohane, n. 18 above, at 234-37.
32. Albert J. Reiss, Jr., 'Consequences of Compliance and Deterrence Models of Law Enforcement for the Exercise of Police Discretion', *Law and Contemporary Problems* 47 (Fall 1984), p. 4.
33. These include, among others, book manuscripts being written and projects being conducted at, or with funding from, Dartmouth College (Oran Young and Marc Levy); the European Science Foundation (Kenneth Hanf); the Foundation for International Environmental Law and Development (James Cameron); the Fridtjof Nansen Institute (Steinar Andresen); Harvard University (Abram Chayes and Antonia Chayes); Harvard University (William Clark, Robert Keohane, and Marc Levy); the International Institute for Applied Systems Analysis (David Victor and Eugene Skolnikoff); the Social Science Research Council (Edith Brown Weiss and Harold Jacobson); and the University of Tubingen (Volker Rittberger).
34. See, for example, Robert O. Keohane, 'Reciprocity in International Relations', *International Organization* 40 (Winter 1986) and Axelrod, n. 30 above.

35. See, for example, Lynton Keith Caldwell, *International Environmental Policy*, (Durham, NC, Duke Univ. Press, 1984), p. 9; Jessica Mathews, 'Introduction and Overview', in Mathews, ed., *Preserving the Global Environment*, pp. 15-16.

Ronald B. Mitchell is an Assistant Professor in the Department of Political Science at the University of Oregon. He holds a Ph.D. in Public Policy from Harvard University. His book *Intentional Oil Pollution at Sea: Environmental Policy and Treaty Compliance* will be available from The MIT Press in Fall 1994.